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PERSONAL EXPERIENCES OF NEPHROPTOSIS *

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My first duty is to thank the members of the Chicago Medical Society for the very high honor they have conferred on me in so cordially inviting me to give this address. It is an honor that I appreciate very highly and I esteem it a great privilege to have been afforded an opportunity of addressing you on a subject in which I am deeply interested and which it is certain will become increasingly interesting to medical men generally in proportion as they give it their serious attention. Nephroptosis is a common condition and examples of chronic ill-health associated with it occur in every doctor's practice. A wide clinical and operative experience of renal mobility leads me to assert most emphatically that it is a real and potent cause of chronic ill-health and is responsible for a serious fall in the working efficiency of many otherwise healthy people. In this address I propose to confine my remarks to a few of the more important points in connection with nephroptosis that have arisen in connection with my own work and by a brief analysis of 100 consecutive cases to give you an idea of the kind of people submitted to operation.

Movable Kidney and Enteroptosis.—Within recent years much attention has been devoted to general visceroptosis and a useful division into congenital and acquired types has been made. I do not propose to enter at all into the many problems connected with general visceroptosis excepting in so far as it is necessary to define the relationship between nephroptosis and ptosis of other organs.

Congenital visceroptosis, whether the kidneys be involved or not, falls outside the scope of my remarks. The condition is due to defective development and cannot in my opinion be remedied by surgical measures. The treatment must be on general lines, must begin early and must be continued during the whole period of evolution from childhood to adult life.

* Read (by request) before the Chicago Medical Society, Oct. 25, 1911.

Of acquired visceroptosis I would like to submit one or two points for your consideration. Where there is general ptosis of the intra-abdominal organs and of the kidneys and associated with this are severe neurasthenoid symptoms and local kidney disturbances, such as Dietl's crises, the term Glenard's disease has been applied to the condition. Now true Glenard's disease is not common and I do not see more than two or three cases in the course of a year. A far more common form of acquired visceroptosis is that seen in women who have borne many children and whose abdominal walls are lax and pendulous. In the erect position the bowels fall into the lower abdomen and practically every organ below the diaphragm assumes a lower level than normal. This form of visceroptosis is extremely common and if estimated by some undue prominence below the umbilicus is almost universal in women over 30 years of age. The symptoms associated with it are rarely severe and are easily relieved by suitable external supports and correction of errors of dress.

A third and very important group of cases is that in which there is not much enteroptosis and yet the associated symptoms are so severe as to reduce the sufferers to a condition of chronic invalidism. The patients are for the most part unmarried and if married have had fewer children than is the average. They have at one time been normal; are comparatively young when the symptoms begin; are organically sound and usually have a good family history. Rest alone seems to do them any real good and the benefit obtained lasts only so long as they are resting. In a majority of these cases examination reveals mobility of one or both kidneys.

Now I think that in dealing with visceroptosis a distinction must be made between the kidneys and the intra-abdominal viscera. The kidneys are normally outside the peritoneum and lie in special sockets at the sides of the vertebral column. Developmentally and anatomically they are not abdominal organs. Enteroptosis and nephroptosis are separate conditions although subject to the same laws. They are usually associated to some extent but only in Glenard's disease, which is comparatively rare, is this association a complete one. Usually, either nephroptosis and the symptoms it gives rise to are predominant and the associated enteroptosis is of little account; or the enteroptosis is the principal trouble and the nephroptosis of little account. This distinction is important from the point of view of treatment. When nephroptosis is the predominant condition external support of the abdomen is unsatisfactory and nephropexy is indicated. For enteroptosis corsets, etc., give good results and nephropexy should not be performed.

Definition of Movable Kidney.—There seems to be a good deal of confusion as to what constitutes abnormal mobility of a kidney. The normal kidney moves with respiration, the range being about half an inch. This movement is caused by the excursions of the diaphragm and is common to all the sub-diaphragmatic viscera. I would define a pathologically movable kidney as one whose position is affected by influences other than respiration and in particular by gravity. This is only possible when there is abnormal laxity of the ordinary kidney supports.

Tests of Abnormal Mobility.—I am accustomed to apply two tests to palpable kidneys to determine whether they are pathologically mobile. First, does the kidney assume a lower level when the patient is standing up than when she is lying down, i. e., is its level influenced by gravity? Second, can the kidney be pushed to a higher level by the examining hand and can it be prevented from ascending during expiration by grasping its lower pole? Even when the normal kidney is exposed from the loin it can neither be pushed up nor its respiratory movements restrained until it has been enucleated from its bed.

Method of Physical Examination.—Renal mobility is frequently undetected because of defective methods of examination. This statement applies with special force to the left kidney, mobility of which is far more common than is generally taught. Except in the case of very stout or very nervous patients there should be no difficulty in detecting a loose kidney. It is essential to examine the patient both lying down and standing up. Only by examining the loin with the patient erect can a just estimate of the extent to which the kidney falls be formed. Further, unless this is done, many loose kidneys, especially on the left side, will be missed. I have frequently failed to palpate a left kidney while the patient was lying down, which at once fell into the iliac fossa when she stood up. The stomach acts as an air-cushion and protects the left kidney from the downward thrust of the diaphragm during deep breathing and coughing. It is, therefore, much more difficult to dislodge it from the renal fossa than is the case with the right kidney. Both kidneys are, however, equally susceptible to the influence of gravity.

It is my invariable rule to examine the patient both in the recumbent and in the erect position. In this way alone can full information be obtained.

The patient is first placed on a narrow couch of convenient height. The shoulders are raised on an inclined plane to relax the abdominal muscles. The abdomen is completely uncovered and a careful general examination of it carried out. The surgeon stands or sits on the side of the loin to be examined. It is impossible to satisfactorily examine both loins from the one side. If the right kidney is being sought for, the loin is enclosed by the left hand in such a way that the thumb occupies the angle between the last rib and the erector spinæ muscle, while the fingers lie in front. The patient is instructed to allow the back to rest comfortably on the couch and to take a series of deep long breaths. During the first few breaths no attempt is made to entrap the kidney. When confidence has been obtained and breathing is going on satisfactorily, the loin is firmly grasped between the left thumb and fingers at the end of inspiration. If the kidney comes below the costal margin, its presence is at once detected, and if definitely movable it can be held. If the kidney is not felt it may be above or below the approximated thumb and fingers. While the loin is still grasped as above, a careful examination of the abdomen below is made with the unoccupied right hand. If the kidney is found it should be pushed back into the loin, the grasp upon which is relaxed to allow of its return. If this manœuvre is successful it is proof that the lump felt is the kidney. Finally, if the kidney cannot be felt by the hand grasping the loin, nor detected below by the other hand, the patient should be instructed to cough. On the right side this is often successful in dislodging a loose right kidney, but for the reason already given usually fails in the case of the left kidney. For the examination of the left loin the surgeon sits or stands on the left side and grasps the loin with the right hand while the

left hand is at liberty to examine the lower abdomen or palpate the imprisoned kidney. This method of examination is easy to carry out, very effective, and does not alarm or incommode the patient. It has several advantages over the bimanual method, in carrying out which novices are apt to compress the loin too forcibly between the fingers of the two hands and so prevent the descent of the kidney. Again, it is more difficult to imprison the kidney and more difficult to distinguish a loose kidney from an enlarged gall-bladder or a Reidel's lobe of the liver which may also descend between the fingers. Last, and most important, the bimanual method occupies both hands and the great advantage of a free hand with which to examine the kidney while it is being held by the other, is lost.

For examination in the erect position, the patient is asked to stand with the body slightly bent forwards and the hands resting on the back of a chair. The examiner stands behind. For the right loin the right hand is used, the thumb as before occupying the angle between the last rib and the erector spinæ muscle and the fingers lying in front, immediately below the costal margin. To examine the left loin the left hand is similarly placed. In this way the whole of the loin can be readily palpated, and the kidney, if down, grasped between the thumb and fingers. The level it assumes under the influence of gravity, and the effect upon it of respiration can be ascertained.

Trauma as a Cause of Nephroptosis.—In the list of causes of movable kidney I would give the foremost place to muscular overstrain. I mention this because its importance has been generally underestimated. My experience goes to prove that in a very large proportion of cases trauma has played an important part in causing the mobility. Heredity, errors of dress, constipation, etc., may be predisposing factors but muscular overstrain is the direct cause. I am inclined to think that the modern tendency for growing girls to take part in active games, such as tennis, hockey, etc., is responsible for many loose kidneys. At puberty, as the pelvis assumes the adult female shape, changes occur in the lower part of the renal fossa. It becomes wider and shallower and affords less resistance to descent of the kidney. At this time violent exertion, especially in girls whose general muscular tone is below the normal, is very apt to loosen the natural supports of the kidney and start it on its downward path. Time does not permit of a full discussion on this point but it is an explanation that has much to support it.

In men, trauma practically constitutes the only cause of renal mobility. Generally there is a history of a severe injury to the back or a violent overstrain. In these cases the initial displacement is forwards, the kidney being forced out of the renal fossa into a position immediately below the costal margin and behind the outer half of the rectus muscle. More or less rotation of the lower pole inward usually occurs, though the actual prolapse is often very slight.

Principal Changes in Kidney and Surrounding Structures.—On opening the loin for the purpose of anchoring a loose kidney, the first thing one notices is a peculiar emptiness. Instead of the fat bulging into the incision as soon as the lumbar aponeurosis is divided it appears to have fallen away, while the perirenal capsule is much less firmly attached to the muscles of the back than usual. This is noticeable even though prolapse of the perirenal capsule with the kidney has not taken place. The perirenal capsule itself forms a more definite structure than usual and is easily identified. The peritoneal fold which usually extends a very little

way into the loin may be much deeper than usual and may cover most of the posterior surface of the kidney. Unless care is taken it is in danger of being wounded. The perirenal capsule, instead of being packed with loose granular fat which can readily be separated from the kidney by the finger, is almost empty. Dense sheet-like adhesions connect the fascial capsule with the true kidney capsule. Though loose and open these adhesions are very strong and it is impracticable to tear them through with the fingers. Usually they are bloodless, but in cases of recent displacement they may be vascular. Where the kidney has from time to time been partially strangled by twisting of its pedicle there may be many large veins among the adhesions. Some of these pierce the true capsule of the kidney and bleed freely on the kidney side when the latter is congested. Clearly they are collaterals which have formed as a result of periodical obstruction of the renal vein.

A typical movable kidney, as seen during operation, has a very characteristic appearance. Unless congested it is smaller and paler than usual and has a curious flabby feel. Its capsule is thick and opaque and has a mottled appearance due to the presence of opaque, yellowish-white patches of varying size. These patches indicate areas of greater thickness and to them are attached the denser adhesions. The capsule is rarely very adherent to the renal cortex and usually strips readily even at the site of the denser patches. It is unusual to find the extrarenal portion of the pelvis, or the ureter, dilated, but the intrarenal portion usually is and the calyces are more capacious than usual. The papillæ are also flattened. Gross hydronephrosis is rare unless the kidney has become permanently fixed in an abnormal position or the ureter is kinked over an aberrant artery passing directly from the aorta to the lower pole of the kidney. Only occasionally does the suprarenal capsule remain attached to the kidney and drop with it, but I have seen it on quite ten occasions.

A very constant band of adhesions of great density extends from the lower pole of a movable kidney downwards and inwards to be attached to the colon, the peritoneum, and the walls of the lower renal fossa. This structure has been termed the nephrocolic ligament. It is, however, pathologic and not anatomical. I have frequently sought for it in vain in the case of normally placed kidneys. To settle the matter, however, I submitted the point to Prof. Arthur Robinson, professor of anatomy in Edinburgh University. He replied that no such ligament should exist on embryologic grounds, that if it did exist its effect would be harmful, and that he had sought for it in vain in several bodies in process of dissection. This being so, there is no reason for preserving it and my practice is to free the lower pole of the kidney entirely from this and other adhesions. Their effect would be to drag on the kidney and jeopardize the success of the operation. The so-called ligament is attached to the colon too low down for traction on it to be of any real value in correcting coloptosis. The cause of the latter when it occurs as a sequence of nephroptosis is the loosening of the attachments of the peritoneum at the hepatic or splenic flexures.

Symptomatology.—The symptoms associated with nephroptosis are so many and varied that a detailed account of them would occupy more than the whole of the time at my disposal. I can only briefly outline their general character. Apart from those resulting from recent sudden displacements of the kidney or from such complications as torsion of the renal pedicle with partial strangulation of the kidney, temporary complete obstruction of the ureter, etc., the symptoms associated with renal mobility are those of chronic functional disturbance. Sometimes one system is mainly affected, sometimes another, but whatever their form they have certain common features. There is almost always more or less neurasthenia and diminution of both mental and physical efficiency. Effort of any kind produces abnormal exhaustion. Usually, the patient is most anxious to get well and is painfully conscious that he is being handicapped by something the removal of which would restore him to health and enable him to compete equally with his fellows. Such patients are temporarily benefited by any treatment in which rest is an essential element, but speedy relapse follows a return to active life. Travel, exercise, and physical exertion of any kind aggravate the condition.

I have been in the habit of arranging cases of nephroptosis in five groups according to their predominant symptoms.

Group 1.—In this group are placed those whose symptoms are local and definitely related to the kidney. The principal symptom is local pain, which is due to recent displacement of the kidney, to congestion from obstruction of the renal vein, or to obstruction of the ureter. Sometimes the pain comes on in paroxysms to which the term Dietl's crises has been applied. These attacks are probably always due to torsion of the renal pedicle and partial strangulation of the kidney. Other local symptoms are—irritability of the bladder as evidenced by increased frequency of micturition; cutting or burning pain in the urethra during or at the end of micturition; and changes in the urine. Hematuria, pyuria, and more frequently albuminuria are met with. The latter is variable, being increased when the patient is up and actively engaged, and disappearing during confinement to bed.

Group 2.—Contains patients whose symptoms are due to functional disturbances of the sexual organs. In women, these are dysmenorrhea, amenorrhea, menorrhagia and metrorrhagia, and persistent leukorrhea. I have met with examples of each of these conditions for which no satisfactory local condition was discoverable and who have been cured by nephropexy. In every instance the general health was disturbed to a degree unaccountable for by the pelvic symptoms. I would emphasize the necessity for excluding movable kidney before proceeding to operation upon the pelvic organs for symptoms for which no gross local cause is discoverable. Further, the most disappointing patients upon whom I have performed nephropexy have been those whose ovaries had been previously removed and I have now given up the attempt to restore such persons to the normal state.

In men, sexual neurasthenia, nocturnal emissions and spermatorrhea may be associated with renal mobility and cured by remedying the latter.

Group 3.—Chronic functional disturbances of digestion are common and may be the principal complaint. They are associated with neurasthenia, depression and hypochondriasis. Capricious appetite, flatulence, paroxysmal attacks of vomiting, severe constipation, and occasionally diarrhea are the usual symptoms. The peculiar feature is that they refuse to yield to ordinary treatment and that no sufficient cause within the digestive system can be found. Dilatation of the

stomach and mucous colitis are not uncommon. My results from nephropexy for renal mobility associated with mucous colitis have been excellent and a permanent cure has followed in practically every instance.

Group 4.—Cases suffering from spinal and cerebral neurasthenia. This is a large group. The leading symptoms are severe and persistent headache, backache, constant "tiredness," periodical fits of black depression, and the feeling "that life is not worth living." Married women cannot do their housework, teachers complain that the strain of standing and teaching causes complete mental and physical prostration, and business men state that they cannot concentrate their minds upon their work, lose their grip of detail and find that everything, even the writing of a simple letter, requires great effort. The greater the necessity for work the more pronounced the symptoms. These people are irritable, restless, and miserable, a nuisance to themselves and all around. They are painfully conscious of their inefficiency in comparison with other people and in spite of treatment and an active desire to get well they remain in a state of invalidism for years. They are comparatively young, organically sound, and of good stock. Of them Weir Mitchell has said: "Why such people should be so hard to cure I cannot say, but the sad fact remains. Iron, acids, travel have for a certain proportion of them no value, or little value, and they remain for years feeble and forever tired." I would add for those of them with nephroptosis, Weir Mitchell's treatment, though of marked temporary benefit, is followed by speedy relapse on returning to ordinary life.

Bearing in mind that in practically every case nephropexy was preceded by prolonged treatment on the usual lines without benefit, my results in this class of cases are most encouraging. Without being able to give the actual figures, I am within the truth in stating that 60 per cent. have been cured in the sense that within a year of the operation they were leading the ordinary life of healthy people.

Group 5.—This class contains patients with symptoms of mental derangement. Many of them were absolutely insane and detention in an asylum was the only alternative to nephropexy. Dr. Suckling has dealt very fully with the relationship between insanity and nephroptosis and I do not intend to discuss it in detail. I can only say that I have personally seen a very large number of his patients and at his request have operated upon them. The results have been very remarkable, complete and permanent cure having followed in a large percentage of them. My own observation compels me to state that where the kidneys are definitely movable in a case of insanity it is only fair to inform the friends of the fact and to offer nephropexy as an alternative to committal to an asylum. An analysis of my work in this direction, together with an explanation of the results, was published by me last year in a monograph on "Movable Kidney," and time does not allow of further reference to it now.

ANALYSIS OF ONE HUNDRED CONSECUTIVE CASES AND NEPHROPEXY

Pressure of work and the shortness of the interval between the reception of your invitation and my leaving England prevented me from making such a careful analysis of my cases as I could have wished. In order, however, to give you some idea of the kind of people submitted to operation, and the proportion in each of the groups described above, I have tabulated some facts about 100 consecutive patients operated on. These are numbered 151 to 250 in my total series of 345 and were operated on between January, 1909, and June, 1910.

With regard to sex, seven were males and ninety-three females. This proportion is a little different from that of the whole series, in which there is one man to ten women. Of the ninety-three women, thirty-seven were married and fifty-six unmarried. In fifty-seven of the cases, both

kidneys were operated on at the same time; in thirty-two the right kidney only, and in eleven the left kidney only was fixed.

With regard to age, nine were between 15 and 25; forty-six between 25 and 35; thirty-four between 35 and 45; eight between 45 and 55 and three over 55. The youngest patient was a boy of 14½ who had both kidneys fixed for severe mental symptoms; and the oldest, a lady aged 70, on whom I performed right-sided nephropexy for frequent and very severe Dietl's crises. Both these cases did very well and complete cure resulted. The average age was 34 and a large percentage of patients come under observation at about that age. It is far more common to find movable kidneys without severe symptoms under 30 years of age than over it. As life goes on, renal mobility causes more serious symptoms and patients appear to be less well able to withstand its baneful influence—it gradually wears them down and once symptoms develop they are practically incurable.

It is interesting to glance for a moment at the occupations of the patients in this series. Of the males, one was a medical student who apparently displaced his kidney at football; one the editor of an important newspaper; one a schoolboy; one an engineer; one a laborer; and two were clerks; Among the ninety-three females, there were thirty-seven housewives, six nurses, nine school mistresses, eleven domestic servants, eight shop assistants and women in business, one lady doctor, and eighteen who had no definite occupation. The proportion of active workers in this list is considerably higher than in an average series of ninety-three English women of the same age and the same social status.

The average duration of the symptoms was five years, and in several they had persisted from fifteen to twenty years. In almost every case, ordinary forms of treatment had been fully tried and had failed.

In twenty-one cases the symptoms were purely local and definitely connected with the kidney. In nine, the digestive system was mainly disturbed, and three suffered chiefly from pelvic troubles. There were thirty-one cases of general neurasthenia, and eight of neurasthenia with mental symptoms, the latter being either suicidal impulses or delusions. Seven patients were quite insane at the time of operation. In twenty-one the symptoms were too mixed to allow of their being grouped.

It is difficult to summarize the results in a few words. To arrive at a true appreciation of the benefit experienced by the operation, a careful consideration of each case before and after is necessary. Of this series of 100 cases, a report from the doctor in charge or the patient has been obtained in eighty-seven after an interval of one year or more. Of these, thirty-five can be described as cured, fifteen as much better, twenty-eight as better, six as slightly better, and three as no better. In other words, about 60 per cent. are cured or greatly benefited; 30 per cent. are better; and 10 per cent. are either no better or very little so. Taking into consideration the fact that most of them had proved incurable by other forms of treatment these results are very gratifying. In fact, in no other department of surgery have I experienced so much gratitude as in this. The sufferers from nephroptosis, in the main, are most depressing patients

to treat. They try the patience of their doctor to the utmost. Treatment is ineffective, or if apparently beneficial, is followed by speedy relapse. The restoration of even a small percentage of them to permanent health is a source of much gratification and nephropexy properly performed in carefully selected cases will be followed by this result, not in a small, but in a large percentage of them.

I wish particularly to emphasize: that nephropexy does not cure the patient except where performed for purely local symptoms: it only makes it possible for recovery to take place. A patient operated on for renal mobility associated with neurasthenia is still neurasthenic after the renal mobility has been cured. The neurasthenia must be treated and will take the usual time to be recovered from. Neglect to appreciate this fact is responsible for many so-called failures and for much unfair criticism. My contention is not that nephropexy cures neurasthenia but that neurasthenia which was incurable before the operation becomes curable afterward. To effect the cure, however, operation must be followed by the careful and prolonged treatment necessary for neurasthenia in general. For this reason the patients whose after progress is most unsatisfactory are those of the hospital class. The necessity for an early return to work and the influence of an unfavorable environment cause delay in the disappearance of neurasthenic symptoms and a prolongation of the interval between operation and restoration to health.

Nephropexy can now be carried out with the safety, precision, and permanently satisfactory results that characterize the operative treatment of hernia. Personally, I have operated on 345 patients and have performed nephropexy 524 times, both kidneys having been operated on at the same time on 179 occasions. In this series there have been three deaths, a mortality of less than 1 per cent. To my knowledge in no single instance has the operation failed to permanently anchor the kidney and on only one occasion has a subsequent operation been necessary. This was for a small hernia which developed in the scar as the result of a severe strain a few weeks after nephropexy had been performed. This is the only instance of weakness of the scar that has occurred. There have been no cases of persistent sinus or permanent pain in the back after operation. These results compare favorably with those obtained in any other branch of operative surgery and prove conclusively that there are no valid surgical reasons why movable kidneys should not be treated by operative means.

In conclusion, my views as to the indications for nephropexy, assuming that there are no surgical reasons to contra-indicate operation, may be summarized as follows:

1. Renal mobility alone is not an indication for operation.

2. Renal mobility demands treatment when associated with:

- (a) Local pain of sufficient severity to diminish working efficiency. Especially is this the case when Dietl's crises occur and when there are evidences of serious interference with renal function, e. g., hematuria, orthotic albuminuria, etc.

(b) Chronic disturbances of digestion for which no other satisfactory cause can be found, and which cannot be relieved by general and medicinal remedies.

(c) Functional disturbances of the sexual organs for which no sufficient local cause can be found and

(d) Progressive spinal and cerebral neurasthenia when ordinary measures have failed to cure, or improvement is followed by rapid relapse.

(e) Insanity associated with nephroptosis has frequently been permanently cured by nephropexy and operation is indicated when the two are associated.

3. Renal mobility in association with severe enteroptosis is better not treated by operations unless it is causing definite local symptoms.

ON NEPHROPTOSIS—MOVABLE OR DROPPED KIDNEY *

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Nephroptosis affords a vast field for clinical research. The great variety of symptoms met with can easily be explained by the anatomy and functions of the kidney and by the mechanical and toxic results of its mobility. The reason the condition has not been universally recognized long ago is that local symptoms are often completely absent, and also because routine examination of the abdomen has not been made. It is of great importance to examine the patient in the erect position as well as in the recumbent. The degree of displacement can be better ascertained and the detection of cases which cannot be diagnosed in the recumbent position is rendered possible—we owe this to Professor Noble of Philadelphia. The evolution of our knowledge of nephroptosis has been greatly impeded by the proper technic for nephropexy not being known, and so surgeons having operated without any benefit resulting, the condition was thought to be of no importance; the failures were in fact surgical.

American gynecologists have rectified this and the late Professor Goelet of New York has given the lead to the world in this subject. The work of Edebohls was also magnificent. There are many others in America who have greatly advanced our knowledge of this condition.

As to the causation of nephroptosis, it is difficult to estimate the share taken by certain conditions. There can be no doubt that athletes are very liable to the condition and that it is this condition of movable kidney that very commonly stops their careers. Excess in athletics should therefore be guarded against. Movable or dropped kidney is far more common among men who have been athletes than among men who have not. Footballers and weight lifters are very liable to it. The condition is very common among women who have to stand many hours

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a day. Trauma is the common cause. The kidney with its capsules is violently shaken and it becomes loose and very gradually descends.

Nephroptosis runs in families and occurs in tall and short people, thin and fat people and in all conditions of life.

The diagnosis is made by palpation. In addition there is a resonant note over the renal area in the back with some sinking in. Palpation of a mobile kidney is usually easy but it requires practice. A kidney may be down at one time and in place at another. *Can the normal kidney be felt?* No, I have never been able to feel the normal kidney, in all cases even where I could only just touch the lower pole, at operation the organ has been 1 or 2 inches down and freely mobile. A kidney may be loose and rotated and may be causing serious symptoms and yet be impalpable.

The condition of rotated kidney is very important. Stuart Tidey of Montreux has done good work in describing this condition. In all cases it is wise after fixing the kidney known to be down to examine the other; in many cases this will be found loose and rotated. The lower pole of this kidney must be fixed outwards. This condition probably explains the failure of a single nephropexy to cure a patient. If both kidneys are down both should be sutured up at the one sitting.

The normal kidney is taut, rigid and cannot be moved by the finger. It can only be brought to the incision over the kidney with great difficulty and shock. It cannot be got out on to the surface of the body without danger to life. A mobile kidney can be pushed about easily with the finger and can be brought out of the body through the incision without any shock and with little difficulty except where the pedicle is very short. The kidney in the normal condition moves with the respiratory movements but only half an inch and there is never any pressure on the ureter by the lower pole. This small mobility is used by some as an argument against nephropexy or fixation of the kidney. But pathologic mobility is a very different thing to the normal mobility, in the former there is mobility on pressure by the fingers, in the latter there is not. In the former there is interference with elimination of urine; in the latter there is not.

As to the prognosis of nephroptosis. It must be remembered that the prolapsed condition leads to disease of the organ. At operations opacities due to thickening of the capsule and cysts are met with, the extent of the disease distinctly coinciding with the age of the patient. Over 40 there is nearly always organic change. In practice I have met with many cases of chronic Bright's disease where the kidneys are prolapsed. I mean cases of undoubted Bright's disease — with hard arteries, enlargement of the left ventricle, retinitis, hemiplegic attacks, albuminuria and casts.

The subjects of nephroptosis are always in danger of melancholia, appendicitis, loss of health with loss of employment from neurasthenia and headaches, dyspepsia, dilation of the stomach, ulceration of the stomach, ulceration of the duodenum, ulceration of the colon, attacks of Dietl's crises, etc.

From a very extensive experience in hundreds of cases and over a period of twenty years I find nephroptosis unless operated on or successfully treated by belts, cannot be cured by rest, massage, electricity, exercises, etc., and that it ruins the lives of those suffering from it and the happiness of their relatives. I have seen cases where I had previously diagnosed nephroptosis fourteen to twenty years ago and I found that their lives have been wretched and that many of them have been confirmed invalids. Many have committed suicide, and many have died from uremia.

The cure for nephroptosis is nephropexy properly performed. That is the kidney being placed and secured in its natural position. Belts are often of great benefit and may remove all the symptoms of nephroptosis and must be used when operation is declined or contra-indicated. The belts must support and elevate the kidneys to do any good. A belt is of no use where Reidel's lobe of the liver exists.

Rest cures relieve for a time only. In the majority of cases the patient is compelled to be always resting without being cured. I have not found physical exercises and massage of any real benefit.

The relation of nephroptosis to functional disorders of the nervous system is of the greatest interest and indeed of the greatest importance.

Let us take migraine or periodical headache. This is a neurosis which runs in families, it is very often a terrible ailment and wrecks the lives of its victims and may drive them insane or to suicide. In all cases where the kidneys are found to be prolapsed or dislocated — nephropexy cures these headaches. The headaches are most probably due to renal toxemia. Headaches are extremely common in the subjects of nephroptosis and are cured by nephropexy. Can these headaches be distinguished from attacks of migraine? I do not think so, for ocular spectra, hemianopsia and a family history run in both and nephroptosis certainly runs in families. Many cases that I have seen suffering from headaches, years later have shown nephroptosis. The left kidney especially causes severe headaches for it cannot descend so easily as the right and so the lower pole is turned inwards and it becomes rotated — causing far more interference with the elimination of the urine than if the kidney were dropped.

Stuart Tidey considers that dislocation of the left kidney is more potent in causing severe headaches than is the right, and my experience amply confirms his views. The first of my cases to be operated on was that of a young woman whose life was ruined by repeated and frequent attacks of headache. Her husband brought her to me and appealed for help for his wife. He was in despair about her, and said her life and his were ruined by her headaches, that she could never go out with him into society or to a place of amusement and they could not have friends to see them. I had seen the woman ten years previously and I looked up the notes of the case and I told her husband that she complained of headaches then but that the only physical defect was a movable right kidney, which was still present. She had had all kinds of treatment in the ten years' interval between her two visits to me without any benefit. The husband at once said that the right kidney must be sewn up, for he

would not go on living the life he did. I supported his view because I had found that by elevating the kidneys with a belt headaches were removed or greatly relieved. I sent her to a prominent surgeon who refused to operate. The husband persisted until his wife was operated on and she was cured. He has told me since that life has entirely altered for the better for them both; that since the operation the wife has never been ill with a headache and has not been an invalid as she was before, but that at rare intervals she might have a slight headache. This was about nine years ago. It was this case and a few others together with the failure of the belts in many cases that led me to recommend my patients suffering from nephroptosis to undergo nephropexy.

Neurasthenia.—This condition is very common indeed in all classes and in both sexes.

One can understand *workers* nowadays becoming neurasthenic. But why should so many young women who have had no hard work to do and who are taken care of by their parents and have proper food, rest and light occupation, without the necessity of getting their living, become neurasthenic? The reason is that in the very great majority of cases they suffer from nephroptosis.

Does neurasthenia cause nephroptosis? It cannot. The kidneys normally are so securely kept in position that great violence has to be used to displace them. In fact it is almost impossible to dislocate them—except with great force and great shock and danger to the patient.

Does nephroptosis cause neurasthenia? Yes. This is shown by the almost certain cure of neurasthenia by nephropexy and by the great relief afforded by belts that elevate the kidneys. Neurasthenia is caused partly by traction of the mobile kidney and partly, I think, by toxemia.

Insanity.—No man, woman or child should be sent to an asylum without careful and repeated examination for nephroptosis, and if this condition exists it should be rectified, the patient being given a chance of recovery without getting the asylum stigma.

No provision has yet been made for the poor insane who suffer from nephroptosis. Hospitals will not receive them, time is needed after the operation for their recovery (up to six months as a rule, varying with the severity and duration of the insanity), and their friends cannot afford to have them watched and taken care of till they are well. Several of such cases have got away and committed suicide soon after leaving hospital. In nearly every case the patient was improving, but had not had time to recover. The best thing to do in such cases is to perform nephropexy and then let them go to an asylum for proper protection until they recover.

The form of insanity met with in nephroptosis is usually melancholia. Mental depression, usually at first periodical, is exceedingly common in the subjects of nephroptosis, and should at once be treated by nephropexy. If not, the patient passes into a condition of melancholia. Suicide is exceedingly common among the sufferers from nephroptosis. Taken early—mental depression and melancholia are cured in a few months by nephropexy.

Out of forty-eight cases of insanity I have had operated on, forty-three are cured and five are not.

The uncured were middle-aged women and the insanity had lasted a long time and in two or three cases only one kidney had been attended to. Moreover, the old oblique incision was made and the kidneys had not been accurately replaced in their normal positions.

The cause of insanity, I believe, is toxemia and I am sure that nephroptosis is by far the most common cause of insanity among women.

You may ask how it is that I am so confident about the tremendous influence nephroptosis has in causing functional disorders of the nervous system. The reason is that I have practiced as a neurologist for nearly thirty years and that in examining my patients I aimed at being thorough. I examined the abdomen in all cases and I was astonished at the frequency of nephroptosis in cases of neurasthenia, headache and insanity. For a long time I did nothing except order rest, tonics, etc., but was disgusted with my failures. I tried belts of various makers but found none would keep the kidneys up. Finally I had external pressure applied over the air pads of Salt's belt and I at once was able to give relief in many of my cases. Headaches and neurasthenia and local pain were at once relieved. But in many cases the belt failed. This was explained by the presence of adhesions in some cases and in others to the great length of the pedicle of the kidney. Of course in the insane cases, belt treatment could not be tried. Owing to the success of nephropexy in the first few cases I went on and recommended it where the patient could not work and get her living through nephroptosis or where her health was gravely affected and in all cases of mental depression and insanity. I have been present at all operations on my patients (between 400 and 500 nephropexies in 303 patients), and have seen what has been done and have kept in touch with them as long as possible after they have left the hospital. Looking back I cannot regret in any case having recommended nephropexy.

The operation has been greatly improved. At first with the oblique incision sinuses were frequent, occasionally the kidney fell again, relief was still not complete because the kidney was not properly elevated. Still, even with these drawbacks, the results were astounding. Goelet's incision and technic with Fullerton's method of taking a strip of capsule over the last rib have been employed in my cases during the past six years. I rarely see any complications now. All my work has been done among my private patients. I could never have given the care and time to the subject necessary to carry it through successfully had I not been independent of all appointments. I must acknowledge the great example and the great assistance rendered me by American gynecologists and surgeons. Without their brilliant work before me, I am afraid my courage would have failed.

The work I have been able to do shows how important it is for physicians and surgeons to work together. In my opinion a physician should attend at operations on the cases he sends to a surgeon. Without good surgeons my cases would not have been cured and without my work

the surgeons would not have had the cases to operate on. I relate three interesting cases hitherto unpublished.

Asthma Practically Cured by Nephropexy.—A man aged 39 years consulted me in December, 1908. He had suffered for five years from very severe attacks of asthma. The attacks lasted as a rule about three weeks. They were getting more frequent and severe and he was in danger of losing his employment through this illness. He had been thoroughly treated for a long time by an eminent physician with the usual remedies for asthma, but was getting steadily worse. I saw him in one attack—he was in great distress with his breathing and his heart was much upset, the pulse being 144. Besides the asthma he was troubled with headaches which he had been subject to all his life; also with dyspepsia, flatulence and fulness after meals, with occasional pain. A peculiar feature about the attacks of asthma was that each was preceded by pain over and around the right nipple.

At the time he saw me the man was a chronic invalid. I found dropped right kidney, and as this was the only exciting factor I could find I recommended nephropexy. He was operated on in February, 1909. I saw him in August this year, 1911. He had gained 7 pounds in weight; he was a small man; he had only been away from work two days during the last twelve months. He was strong and not an invalid, and the attacks were trifling and the peculiar aura which I attributed to the right nephroptosis had disappeared. In fact he was a well man.

A Severe Case of Melancholia Cured by Nephropexy.—In February, 1909, a single woman aged 45 years was brought for my advice. About twelve months previously she had invested some of her money in building a house and she got worried and then suffered from insomnia and mental depression. For nine months she had been in charge of two nurses and was never left day or night. She was unable to feed, wash, or dress herself, and was unable to speak coherently. The nurses could not understand what she said. She could only mutter incoherently and her brain power had completely gone. She had tried to get into the sea and had in the early stage of her melancholia begged for poison. Both kidneys were badly prolapsed, and were sutured up in March, 1909. On Aug. 2, 1909, she was picking fruit near the sea and she threw herself into deep water. The nurse shouted to her to hold on to a branch of a tree, which she did until help arrived and she was taken out. She said that God told her to do it. Later on, in 1910, she again got into water and tried to drown herself in her bath. But her mind was greatly improved. She took an interest in music, could talk quite rationally and could draw and paint. In August, this year, the nurse wrote to say that she was really very well, that she wanted to go back to her own house, that she had begun to think of the expense of her illness, and to go into her banking accounts. She was quite natural and intelligent. In September last I saw her and found her quite well.

The Following is a Typical Case of Neurasthenia Caused by Nephroptosis.—The patient had been ill for ten years and could not get cured. She had never been examined for nephroptosis and no such diagnosis was

ever made. A woman aged 37 years, married; with two children. She lives at Winnipeg, Canada, but had to come to England hoping to benefit her health and to rest from housekeeping. She is tall and emaciated. The family history was excellent. She had been ill ten years. Her early symptoms were pain in the back, inability to walk, indigestion, slight at first, mental depression, improving with resting. One doctor in Winnipeg gave lavage of the stomach once a day for a year and put her on milk diet; she became so weak that another doctor was called in who at once said he could not diagnose the case and sent her to Battle Creek Sanatorium. Here she was thoroughly examined, the blood, stomach contents, urine, etc. being analyzed. She had electrical treatment, hot air and other baths. An Alexander operation was suggested, but declined. She staid at Battle Creek five months. She was better for the dieting, but was no stronger; was always tired and depressed. During the last ten years she had had the Viavi treatment and treatment by osteopaths. She had consulted a specialist in London and one also in Detroit. I was asked to examine her in August last and found both kidneys badly prolapsed. During her stay in Birmingham she had a short motor drive and was in bed twenty-three hours after it, being collapsed. She could not, or thought she could not take ordinary food. Her food is sent from America. She never is able to get up before midday, and can scarcely stand. A railway journey nearly always upsets her. In fact she is a miserable neurasthenic invalid from nephroptosis.

DISCUSSION

Dr. A. J. Ochsner: It is a rare privilege to hear the results of such extensive and extraordinary observations as our visitors have been able to give us, the description of their results and the logical discussion of their observations. Personally I have been greatly benefited, and I am sure that this society has profited greatly by these addresses. I have been deeply interested in this subject for many years. In 1887, 24 years ago, while working with Prof. Pavlik in Vienna, this was one of the subjects in which he and his pupils took a great amount of interest, and we examined systematically and carefully all of the patients who came to us. Most of them belonged to the working women of Vienna and the surrounding country, and those of you who have been in Vienna are familiar with the fact that nowhere do the women work harder and in more perilous labor than there. Our observations resulted in establishing the fact that 75 per cent. of all the women that came to this clinic suffered from displaced kidneys, which is 15 per cent. higher than the proportion found by Dr. Suckling in his 18,000 cases. The reason for this lies in the fact that the class of patients we had there was a different class sociologically. Upon returning to this country I followed up the observations and found that here among the working women the percentage of these cases was very high, and that among all patients there is a high proportion of cases of displaced kidney. Our conclusions were that the proportion of kidneys which really had much to do with diseases from which the patients suffered was relatively small. The proportion of cases which I thought would profit from an operation has been relatively small, so that I rarely operate upon these cases, although the total number I have operated on is quite considerable. The proportion in Dr. Suckling's cases is something like this. He had from 40 to 60 per cent. out of 18,000, making about 9,000 cases that had displaced kidneys. Of those approximately 300 were operated on, somewhat over 3, not quite 4 per cent. of the cases having displaced kidneys. I would say that in my own practice the proportion of cases which I operated on was very much less than this. Prob-

ably there are some of the cases which should have been operated on that I did not operate on, but I wish to impress upon the members the relatively small number of cases that were operated on out of the very large number of cases mentioned in Dr. Suckling's address. I imagine that in the future that proportion will be increased somewhat in his own experience, but when you come to consider the limitation which Dr. Billington has given us, eliminating from the class which requires operation the cases in which there is a general enteroptosis in connection with this condition, and the cases in which there is not a definite demonstrable relation between this condition and the disease, and the cases in which another condition seems to be definitely the cause of the disease, you will probably eliminate the proportion very similar to the proportion we find here in Dr. Suckling's address. When the subject of movable kidney was first mentioned in this country the operation was performed in many cases simply because there was a movable kidney. Now that is distinctly what Dr. Billington tells us not to do. I have seen these kidneys operated on for the relief of gall-stones, strabismus, locomotor ataxia, and almost anything you can think of. Now that is what Dr. Billington tells us not to do. We will have a right to fasten up a loose kidney when there is a very definite relation that we can demonstrate very clearly between the fact of its being a loose kidney and the trouble from which the patient is suffering. When the circulation of the kidney is definitely interfered with, when the flow of urine from the kidney is definitely interfered with, we have either a lack of elimination or a lack of removal of that which has been eliminated, and consequently a degeneration of the kidney resulting from the backing up, then the indication for the operation is absolutely clear: when there is simply a loose kidney there is absolutely no indication unless you can establish this relation that both of these gentlemen have pointed out to us. There is no difficulty about making the diagnosis of displaced kidney. That is the simplest thing in the world if you follow the directions given by these gentlemen. The difficulty is in finding whether that condition has a definite relation with the thing that is the matter with the patient. And there is where our trouble has come before. There is no trouble in keeping the kidney up. I was in Prof. Hahn's clinic, and observed his operation, which is the same as Dr. Billington's with the exception of carrying the capsule of the kidney up over the last rib, and later on when assistant to Prof. Senn, the latter added to this operation the placing of gauze beneath the lower pole of the kidney in order to have a temporary support until healing had taken place, to take the strain off the sutures above and to produce later a connective tissue support. To that Dr. Billington has added definite directions concerning the loosening of adhesions between the colon and the lower pole of the kidney, which is an important point. I would say then if we follow the reasoning of these gentlemen, and observe the cautions which they have placed before us and examine these patients with the same thoroughness, we will undoubtedly benefit greatly from what we have learned to-night. If, on the other hand, we go away with the idea that loose kidneys have to be fastened up, then we will do an endless amount of mischief, and while those of us who will not follow their directions will blame our instruction for the bad results that we will get for these cases, we should instead blame our incapacity for understanding what we are told. I wish personally to thank these gentlemen for their splendid papers.

Dr. Wm. M. Harsha: I agree with Dr. Ochsner that work of the character that these gentlemen have done should command our attention. Notwithstanding so high an authority as Prof. Osler says the subject has been given too much prominence, I am quite convinced myself, not only by the papers of the gentlemen, but by my own experience, that the subject has not received too much attention. The condition is very much more frequent than is generally believed. It is very much more frequent in women than in men; on the right side much more frequently than on the left; on both sides very much less frequently, but it happens on both sides. Now as to the causes, I think we are very much in the dark. There are a great many causes which may operate to produce it. Traumatism undoubtedly has some influence; childbearing very little I think. Heredity is the most important predisposing cause. Of course each one of us has to discuss the

subject from his own standpoint, each of us seeing different classes of patients. The cases which I have seen have very largely been associated with neurasthenic conditions, so much so that it has seemed to me neurasthenia must have some positive relation in the production of the trouble. I have come somewhat to share the opinion of Albarran, who considered nephroptosis together with some kinds of headache, as stigmata of degeneration, and I think the argument of Dr. Suckling as to its frequency in the insane confirms that view. I have not seen to recognize many cases of the rotated kidney to which Mr. Suckling refers. I will say further that in support of the neurasthenic theory the majority of my cases have been unmarried women of the neurasthenic type, so that childbearing had no effect. I recall one typical case of a woman, about 30, tall and slender, neurasthenic, depressed, approaching invalidism. She had all the symptoms, including the crises of movable kidney. In this case, when she stood up, the bulging of the kidney as it rotated could be seen very clearly. The patient was cured, gained 20 or 30 pounds in a few months and was restored to her work, by proper fixation of the left kidney.

I operate on very few cases. A number of years ago I operated on several cases. I then tried supports of various kinds, and I found my patients did as well, so far as I could see, with the support as with the operation. Several things support the kidney; peritoneum in front of it, the blood-vessels, the perirenal fat, and the abdominal viscera; and the abdominal viscera are not the least of these supports. Now I believe that all of the viscera-intra-abdominal are lower as a rule when we are upright than we are likely to think. We gain all our impressions as to the location of the viscera both in the living and dead in the recumbent position. As to the diagnosis there is little difficulty. I find that in patients lying on the back, with the abdomen relaxed, we can easily determine a movable kidney. We can confirm it sometimes by the patient standing up, but my own experience has been that I could find many more in the recumbent position than standing up. As to the prognosis. It does not seem to me that I have seen many cases go on to the serious conditions that the essayist describes. I have seen this one case I cited and others approach invalidism; but I have never seen cases go on to insanity. I have seen a number of patients go insane, mostly women, and I have been trying to think if any of those had movable kidney. The majority of them have gone to the asylum, and have come out cured in from three to six months; one of them in two years. So far as I know not one of them had dropped kidney. As a matter of fact we should examine our patients better if we want to find out all that ails them. As for the symptoms, I did not look for such a wide range of symptoms as has been suggested here due to this cause. The prominent symptoms in my patients have been gastric disturbances, pain, dragging, some backache and neurasthenia. With an extended vision into other more grave conditions, one may be able to trace their etiology to nephroptosis. I think that the cure in some of these cases may have been brought about by the rest cure. I should like to know the theory upon which ill health, melancholia and insanity is explained in nephroptosis. I have not found in my cases such urinary findings or disturbances as have been described. In very few cases, except in those with crises, have I found hematuria or albuminuria. I would like to know whether it is the mechanical disturbance, the toxemia, upon which we are to blame so many things, or whether it is a combination of these that produce the symptoms. I think the x-ray will be of benefit in diagnosis. To have our attention called to these cases, and have them analyzed so that we may be clear about the indications for operation should be of great advantage.

Dr. D'Orsay Hecht: I trust that I show no discourtesy to our distinguished foreign guests if I, as a neurologist, having listened to the contentions of a neurologist, take issue with Dr. Suckling as to the value of operative intervention in nephroptosis as a cure for such an array of disorders of the mind and nervous system as have been cited this evening. To challenge each and every statement that has been made to-night would perhaps tend to raise a doubt in the minds of those present as to the trustworthiness of the observations, and indeed this is not in the least intended.

At the outset of his discussion, Dr. Suckling sets forth his vast experience, both in institutional work and private practice, and there can be no doubt as to the sincerity with which he has approached the clinical problem of dropped kidney—a term, by the way, which I cannot unqualifiedly subscribe to. But I do think that to let his theory, his net results and his convictions go entirely without contradiction would be an injustice to those in the audience less familiar with the subject under discussion than the neurologist, the psychiatrist, or, for that matter, the physician who in his reading of the literature seeks to keep abreast of the best medical thought. I, for one, want to put myself on record as holding that the thing Dr. Suckling advocates is, in its nature, a distinct step backward, and not in the least in consonance with our modern views of neuro- or psychopathology. I think that even in England, where Dr. Suckling has found his large material and the opportunity to carry on his work, he will not receive the unqualified support of his colleagues in the presumption that insanity, for instance, can be cured by surgically addressing a prolapsed kidney. It is true, as he says, that many of the men in charge of insane institutions have little capacity other than that of custodians, caring for the institutional insane, but there are those who, in connection with institutional work, do illuminate the genesis of insanity in a spirit thoroughly modern and scientific, and our guest must agree with me that such work as is being done by Mott, at Claybury, on the research side, to say nothing of the clinical traditions upheld by Tuke, Mercier, Clouston and others, is not to be viewed with indifference or disdain.

Dr. Suckling this evening has made very free use of the word *melancholia*, which, as a clinical designation, is not as current in psychiatric literature as it was a decade ago. However, this is perhaps less relevant than a criticism of his case histories, both as they appear in his book, with which I am familiar, and as related this evening. In my opinion, the data are far too meager to warrant their coming under the designation of *melancholia* or any other classified psychosis. I admit that it is very possible for a prolapsed kidney, by reason of its dislocation, to give rise to nagging pain that will eventually produce irritability, introspection, impair normal activity and, on favorable soil, develop a strong hypochondriacal tendency, but all this is not *melancholia* in the modern acceptance of the term—no, not even when delusions and suicidal tendencies, so-called, are super-added symptoms.

It would take me beyond the time limit of discussion, as announced by our Chairman, to go more deeply into questions of differential diagnosis. I cannot, however, refrain from adding that Dr. Suckling's position differs not in the least from those who strongly maintain that eye strain is a cause of essential epilepsy, or that a retroflexed uterus, adenoids, hypertrophied turbinates, or what not, are causes of migraine. The correction of a refractive error has never cured a genuine epilepsy; gastric lavage or shortening the broad ligaments, intended to correct uterine malposition, has never cured a genuine migraine.

Gentlemen, these theories, which never should have been held, are long since exploded and obsolete; they never were borne out by any rational correlation of pathologic and clinical facts. I feel that it would be working a great injustice to our patients if some of the audience were led into the belief that they may freely engage in the pursuit of hitching up "dropped kidneys." To accomplish relief from pain and its innocent secondary effects resulting from traction on the ureter and kidney is possible by surgical means, but I cannot conscientiously subscribe to the theory that nephrorrhaphy or nephropexy will cure neurasthenia, *melancholia* or the insanities.

Conceding the sincerity of Dr. Suckling's remarks, I trust he will take no offense at my endeavor to express a righteous difference of opinion.

Dr. H. I. Davis: In line with the last speaker I will again ask apologies from Dr. Suckling for assuming to dispute some of his assertions. You have before you, Dr. Suckling, a man who has also handled possibly thirteen or fourteen thousand cases of insanity. It is your contention that dropped kidney is so often the cause of *melancholia*. I think your definition of insanity is somewhat vague. Some of your patients were depressed; some delusions and some hallucinations.

nations were present. As a matter of fact, we all know that all delusions and all hallucinations are not insane hallucinations and delusions. I mean that a neurotic sane person may have delusions and hallucinations. Another point; Dr. Suckling tells us that dropped kidney is found comparatively rarely among men. Now, gentlemen, excluding possibly psychoses of intoxication, and general paresis which are more common among men, I think there is just as much insanity among men as among women. I am willing to subscribe to the contention of Dr. Suckling that many changes in the organic make-up of men or women have their corresponding effect in the psychic make-up. There is hardly a physical illness that does not show some corresponding effect in the psychic make-up of a person; take for instance the depression of a person suffering with jaundice, or diabetes or in a patient suffering with myxedema. And the dropped kidney may produce disturbance in the nervous system of the person so suffering. But I think it is a very far step to say that dropped kidney is a real causative factor of true insanity. I divide neuroses from psychoses, and I really cannot conceive the idea of such a mild physical disturbance as dropped kidney causing insanity. We know of many psychoses developing as postoperative psychoses. I will subscribe to this, Dr. Suckling, that if a patient suffering from any form of psychosis is found to be suffering also from dropped kidney, or any other physical ailment that requires active interference, we ought to correct it, and I am sure the operation alone does not cure the insane person, but at best only promotes their chance of recovery. The causes of insanity are deeper than any such physical shortcomings.

Dr. Suckling (closing the discussion on his part): I am extremely obliged for your kind criticisms of the paper, and I will try to answer them. Dr. Harsha mentioned the cause of childbearing. I agree with that, and that heredity is a very important cause; I found it running in families constantly; sisters and brothers suffering from it, father and mother have it. I was sorry to hear Dr. Harsha say he had discontinued the operation. I think if the surgeon is not supported by the physician, the surgeon has no opportunity of doing work. I have proved by case after case that it is the proper thing to operate in these cases of neurasthenia, insanity and headaches. Now I described the symptoms produced by dropped kidney. It is not a very good term, but it is a very useful one, for it reminds you to examine always in the upright position. I divided the causes into toxic and mechanical. We find the urine coming away from a prolapsed kidney is slower in elimination and is less high in solids than the urine coming away from a normal kidney. Then the analogy between chronic Bright's disease and nephropotosis. You are familiar how patients with chronic Bright's disease are neurasthenic, getting delusions, how they are certified as insane and sent to an asylum. The symptoms are not just the same when the kidney is prolapsed. One is curable and the other is not. Now Dr. Hecht as a neurologist does not agree with me. I can only ask Dr. Hecht to give the surgeons a chance when he gets a case of loose kidney. As to the diagnosis of insanity, I don't know that the definition of insanity differs from the one in England; I can only say that these are all cases which would otherwise have gone to the asylum had they not been operated on. Then Dr. Davis says my definition is loose. Well I can only say, gentlemen, that you must excuse the definition. I am only dealing with the facts. Dr. Davis says I didn't say it causes insanity in men. It does cause insanity in men. I have had absolutely two bad cases in men. It is not so frequent in men as in women; of course, the men drink more than women and have other foibles.

Dr. Billington, closing discussion: I thank you for the vote of thanks and also for the privilege accorded us for presenting our views. I don't think any of the criticism has been levied against my paper. All I can say is that I have operated on a number of people who undoubtedly were insane in the sense that it necessitated supervision in an asylum, and in the course of a few months they got well and remain well. That is the fact, but when it comes to the explanation of the reason of their getting well I am in deeper water, but I would like to suggest one or two points, on general lines purely. Looking at it in a common sense way it looks to me that the explanation might be founded on one or two things. In the first place, given a patient with an unstable nervous system, and

there are a number of people going about on the verge of nervous instability; it seems to me that if such an individual has a handicap added, no matter what it be, what was an unstable state of equilibrium, or a state in which the patient was just on the safe side, becomes turned over on to the other side by this last straw. Now supposing that physical handicap was removed, is it not possible that swinging back into the same condition may occur? I have seen cases become insane from the excessive use of alcohol and drugs; you remove the cause, and they are sane again. And I would suggest that the explanation is not that the movable kidney is the cause of the insanity. You have something more than a loose kidney, but I don't see that that is any reason for refusing to operate on the kidney. I think one's object is to make the body as healthy as possible in the hope that the mind will recover, and on that ground alone I have operated on these cases, and 75 per cent. of them got well. I think that is sufficient to justify one in telling, at least the patient's friends, that the condition of nephroptosis exists and that the rectification of that adds to the chance of recovery. The patient's people do not like to see them go to an asylum.

Dr. Suckling: Dr. Billington stated that he had performed nephrectomy in 20 of my insane patients, that they were insane before the operation and that they recovered in a few months after.

I was dealing with facts, not with theories or definitions of insanity.

THE TREATMENT OF PUERPERAL SEPTICEMIA *

L. W. LITTIG, A.M., M.D., M.R.C.S.

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A paper on puerperal septicemia may well begin with a few words on prophylaxis. The first question: Is a preliminary disinfection of the vagina advisable? To answer, Doederlein subjected 500 puerperæ to antiseptic irrigation of the vagina just prior to labor. Five hundred other puerperæ were delivered without this preliminary disinfection, the patients being taken alternately as they entered the institution. Of the first 500, those disinfected, 12.8 per cent. had fever. Of the second 500, those not disinfected, 8 per cent. had fever. Or, eliminating those in whom infecting germs were transplanted into the vagina from the external genitals, 10 per cent. of those disinfected had fever, while but 5.2 per cent. of those not disinfected had fever. Doederlein uses rubber gloves, and carefully disinfects the external genitals and the skin about the vulva, that the gloved finger or the gloved hand may not transplant pathogenic germs from without into the vagina.

Doederlein believes in the protecting influence of the *Bacillus vaginæ*, which secretes lactic acid, and which thus renders the pavement epithelium-lined vagina uninhabitable for pathogenic germs, which, when introduced into the vagina from without, are destroyed within ten days or two weeks. The gonococcus is not an exception, as it takes refuge in the cylindrical-epithelium-lined cervix and in the cylindrical-epithelium-lined ducts and glands about the introitus vaginæ, where it retains its vitality for an indefinite period. Doederlein believes that it is most important to avoid the mechanical transplantation of pathogenic germs

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into the vagina from without, not only during labor but also during the few weeks prior to labor. The lesson is plain.

In regard to the value of preliminary disinfection, Eisendreich publishes results practically similar to those of Doederlein. Of 460 cases with preliminary disinfection of the vagina, 6.2 per cent. had fever, and of 477 cases not disinfected, 3.5 per cent. had fever.

Hoffmeier, in his report, considers only spontaneous deliveries. He maintains that auto-infection is possible, but extremely rare. For twenty years he disinfected the vagina prior to delivery, but without one case of acute infection resulting in death within a few days. More recently, he has delivered 1,036 puerperæ without disinfection, with one such death, this patient having been examined once by a midwife, and, further, having had acute tonsillitis. The autopsy did not determine whether the infection was from the tonsil or not, the pathologist maintaining that death was not due to puerperal fever, but more likely due to infection from the tonsil. However, the case made such an impression on Hoffmeier that he is much in doubt as to the advisability of not disinfecting the vagina.

I think it may be assumed that preliminary disinfection of the vagina is more apt to invite rather than prevent infection. Since pathogenic germs may be carried into the parturient canal just prior to, or during labor, disinfection of the external genitals and the neighboring skin is just as important as disinfection of the skin before a laparotomy. For practical working purposes, we may accept the views of Doederlein: no auto-infection, no disinfection of the vagina, careful disinfection of the external genitals, and gloves. But listen to Michel, who tells us that it is perfectly safe to go from a case of the most virulent infection to a laparotomy, if the coat be changed and gloves be worn. A beautiful faith in the efficiency of gloves, but a most pernicious teaching. Like Deipser, Michel maintains that puerperal fever may be from without, from the bowel, or from both without and from the bowel. He states that the unavoidable traumatism of labor so lessens resistance that germs may invade the uterus or adnexa from the intestinal canal. A very comforting view under certain circumstances, and which may enable a considerate consultant to tell anxious friends and relatives that such was the mode of infection in the particular case under consideration, but it cannot be accepted by a man with a surgical or an obstetric conscience.

But one way or another, we always have puerperal infection with us, and those who are not engaged in obstetric practice constantly see cases in consultation. Twenty-four hours after delivery the puerpera is suffering from headache, she has passed a sleepless night, her tongue is dry, her face is flushed, and she has a slight fever, her pulse has increased in frequency, and she lacks the calm facial expression of the new mother. It is the first call and all is not well. Other causes of the untoward symptoms are eliminated and a diagnosis of childbed fever is made.

In these days, a microscopic and a bacteriologic diagnosis are first thoughts. What aid may we expect? Sigwart suggests the following procedure: A bouillon and a blood agar culture are made from the

lochia. As practically all microbes develop well in bouillon, if the bouillon show a pure streptococcus culture, it will be some evidence that the case is one of streptococcus infection. If, on the other hand, the bouillon show a turbid mixed culture of streptococci and various bacteria, it indicates a sapremia. The blood agar culture will show whether or not the streptococci are hemolytic, but a pure streptococcus culture on blood agar does not indicate a sapremia, because streptococci develop much more readily in this culture medium than the other microbes often present in the lochia. The bouillon culture, and the blood agar culture may indicate, first, a streptococcus infection; and second, that the streptococci are hemolytic. "But," says Sigwart, "I found hemolytic streptococci in two-thirds of the non-fevering puerperæ examined by me." The presence of hemolytic streptococci does not necessarily indicate a virulent infection. Sigwart further draws important conclusions from the examinations of a smear. If the field show a uniform carpet of leukocytes, with a greater or lesser abundance of diplococci and short chains of streptococci, with very few other bacteria, septic infection is indicated. If the smear do not show a uniform carpet of leukocytes, but rather streaks of tenacious stained mucus between which are seen islands of leukocytes, the entire field showing a great abundance of cocci and bacteria of all kinds, sapremia is indicated.

Sigwart resumes as follows: If the bouillon culture show a pure growth of streptococci, if the blood agar plate show the streptococci to be hemolytic, and if the smear show diplococci and chains of streptococci with an absence of other bacteria, the case is probably one of streptococcus endometritis.

Schmidlechner does not differentiate between puerperal endometritis and sapremia, maintaining that puerperal endometritis is not to be differentiated "bacteriologically, anatomically, or clinically" from sapremia. Sapremia or resorption fever occurs when the toxic products of bacterial action, whether in the uterus or in the vagina, are resorbed, and this resorption is favored by deficient drainage and pressure. Schmidlechner found streptococci in the lochia of 22 per cent. of non-fevering puerperæ, and in 86 per cent. of fevering puerperæ, many examinations giving negative results. He concludes that bacteriologic examinations are of scientific interest only, and of no practical value in the treatment of the patient. Winter enumerates the various microbes which cause resorption fever, but adds that it is impossible to determine which particular organisms are making trouble in a given case. He adds, "Yes, we must go still further, and entirely let fall (*gänzlich fallen lassen*) the attempt to base a differential diagnosis between resorption fever (sapremia, saprophytic intoxication) and septic conditions on the presence of streptococci, because streptococci are present in the lochia of the great majority of fevering puerperæ, be it a one-day fever, or a severe infection. Whether the determination of the specific characteristics of the streptococci, as by hemolysis, will make such a differential diagnosis possible, is a question for the future." The indications for treatment do not depend on the microbe present, the lochia may be sterile, and the bacteriologist can give

no aid. Watkins tells us that the findings in bacteriologic examinations are often unsatisfactory, and as yet of no practical value. In fifty-three cases, he made no attempt to differentiate between sapremic and septic cases, or between premature and term cases. Such classification is convenient but of no practical value. Vineberg states that we have no reliable clinical or bacteriologic guide in prognosis in a given case. The presence of streptococci in the lochia does not warrant the diagnosis of puerperal endometritis. A sudden onset on the second or third day with rigors and chills, if a considerable elevation of temperature continue for a long time, if toxic symptoms be especially marked, septic infection may be suspected. On the other hand, transient, one or two day fever, with mild symptoms, suggests saprophytic intoxication. But between these extremes there are so many transitions that a differential diagnosis is not possible in the great majority of cases. Until the diagnosis of septic endometritis is positive, the treatment must be that of saprophytic intoxication. The indications for treatment must depend on the clinical symptoms.

It is said, by some, that the examination of the blood is the thing, but Vineberg, quoting Lehnartz, tells of sixty cases of puerperal septiemia, in thirty-eight of which the blood-culture was negative, and in twenty-two positive. Of eighteen recoveries, five cases gave a positive blood-culture.

Fehling, discussing Doederlein's paper, states that many patients die without having bacteremia, and many live in spite of it.

Watkins attaches but little importance to a leukocyte count. In sixty-one cases reported by him, most of them having been curetted before admission to the hospital, the leukocyte count averaged from 5,000 to 58,000. A low leukocyte count, with high fever, suggests low resistance, a continuous low count suggests recovery. So we accept the view, that, to-day, in practice, "Puerperal endometritis and saprophytic intoxication cannot be differentiated bacteriologically, anatomically, or clinically."

Resorption fever lasts usually one or two days, the extremes being one to four, with spontaneous recovery in practically all cases. Septic endometritis usually lasts five or six days, the extremes being two to twenty-one, with spontaneous recovery in the great majority of all cases. Infected tears of the vulva, the vagina, or of the cervix, usually result in recovery within a few days.

Winter reports ninety-five cases of retained membranes. Of these, fifty-three did not have fever, of the forty-two fevering cases, all recovered in from one to twelve days. Adherent placenta is a far more serious condition. The mass is greater, there is more food for microbes, the spontaneous separation is gradual, and cannot be affected without hemorrhage and exposure of fresh surfaces, all of which favor infection. Winter reports twenty-two cases of adherent placenta, and in one of these cases there was a spontaneous delivery in a few days. Thirteen were without fever until the placenta was removed. In many cases, in the absence of infection, the placenta will be delivered spontaneously and without fever, but in the majority of cases, there will be infection.

With the above conditions to be met, what means have we to meet them? They are: "(1) vaginal douches, (2) irrigation of the uterus, (3) permanent irrigation of the uterus, (4) drainage of the uterus, (5) disinfection and cauterization of the endometritis, (6) atmocausis, (7) ecouvillonage, (8) curettement, (9) the removal of retained placenta, (10) the disinfection and cauterization of wounds in the perineum, vulva, vagina."

Winter would irrigate the vagina in resorption fever, because infected lochia, bathing vaginal or cervical tears, favor resorption. A vaginal nozzle with a closed end must be used, the openings directing the streams of water downwards.

Uterine irrigations may remove retained lochia, blood-clots, and shreds of membrane, with the microbes they carry, and thus be of value. They are of little value in septic endometritis, although they may lessen resorption, but they are exceedingly dangerous because they may produce new foci of infection. Winter believes that fluid may be forced directly into open veins, and that thrombi may be dislodged, causing hemorrhage. They may cause rupture of an abscess, or a fresh pyosalpinx, peritonitis, parametritis, etc. A most skilful hand cannot avoid all these dangers. Winter quotes Wylie who says that only an artist may give these irrigations. Winter would irrigate the uterus in three conditions only: (1) to combat toxic symptoms in lochiometra, when the uterus cannot be drained by simpler means, (2) in long continued puerperal endometritis, (3) before and after every intra-uterine procedure, the vulva and vagina being carefully disinfected before entering the uterus. The irrigator must be introduced with the fluid running to avoid the introduction of air, and must permit a free flow inward and more free flow outward.

Permanent irrigations are considered unnecessary and not free from danger.

Uterine drainage, as by the introduction of a rubber or a glass tube into the uterus, gauze packing to surround the tube, is a method to be used only when drainage cannot be secured by other means, as in the case of a tumor in the vagina or cervix. Caustics introduced into the uterus are to be condemned. Atmocausis or the sterilization of the uterine cavity with steam is likewise condemned. Ecouvillonage or scrubbing the interior of the uterus with a brush somewhat similar to those used to clean bottles, is not resorted to in Germany, says Winter. The curette, in the puerperium, is dangerous and must be entirely discarded, except in those cases of abortion where the finger does not suffice.

Winter considers the removal of an adherent placenta a rather hazardous proceeding. It is probably infected, and its removal is apt to be followed by new infection. Pyemia and death followed its removal in two of fifteen cases reported by him. If the symptoms be mild and without hemorrhage, leave the placenta. If the symptoms of intoxication be severe, the placenta must be removed, except in the presence of pyemia and peritonitis. Irrigation must always precede attempts at removal, and the finger only be used. In the case of local wounds of the perineum, sutures must be removed, recesses coated with tincture of iodine, and drained with gauze.

In the presence of puerperal fever, Montgomery would proceed as follows: If the lochia be foul smelling, the cervix open, and the uterus enlarged and tender, the presence of decomposing decidua may be assumed, and the uterus should be cleansed with the gloved finger, the patient being under ether. A blunt curette or a gall-stone scoop may be used with the greatest gentleness. The uterus is carefully irrigated with a normal salt solution, or with 50 per cent. alcohol, or with a very dilute iodine solution. It is gently packed with gauze squeezed out of a 5 per cent. alcoholic solution of iodine, the gauze to remain in the uterus for twenty or thirty minutes, when it is removed. There is to be no further local treatment. The greatest gentleness is necessary that the uterine mucosa may not be traumatized and new areas of infection thus opened. It must be remembered that there may be rigors, chills, and a sudden rise of temperature, to 105 or 106 degrees after this treatment due to a forcing of toxins into the circulation, a contingency to be always remembered. Pollock reports seventy-seven cases of puerperal infection, which had been subjected to more or less local treatment, sixty-three having been curetted one or more times, and of these seventy-seven, seventy-two developed peritonitic or parametritic exudates. Pollock does not enter a closed and contracted uterus, unless secundines are present. These are removed, gauze squeezed out of tincture of iodine is introduced into the uterus and left thirty minutes, at the expiration of which time it is withdrawn. There is no further local treatment. If the uterus be contracted and empty, the cervix dilated, the uterus is irrigated, but not packed. Pollock does not use cathartics, but controls abdominal distention by means of lavage, enemata, and restricted diet.

Carstens holds that local treatment is of no avail in puerperal sepsis. Uterine irrigation often does harm. Veit would remove decomposing placental rests, being careful not to open new areas of infection. The vagina must be disinfected, ergot given to produce contraction of the uterus. If the cervix be open, the uterus is entered under guidance of the eye, the finger being used to remove debris. If the cervix be closed, the finger must not be introduced into the same, but the uterus is irrigated with 50 per cent. alcohol, a free return flow preventing septic material from being forced into the abdominal cavity. With general infection, careful exploration will do no good, but it will do harm.

Schmidlechner would cleanse the ulcers about the vulva with peroxide of hydrogen and disinfect them with tincture of iodine. Foul smelling lochia indicate retained decidua. The uterus is most carefully irrigated with sterile water, normal salt, or permanganate of potash.

In the present state of our knowledge, the use of vaccines cannot be seriously considered, stock, polyvalent, or autogenous. The last mentioned was very recently recommended by Gilmore (paper read before the Iowa Union Medical Society), but it is difficult to see how its use can have a rational basis. If the case be one of bacteremia, the blood is streaming with millions and millions of microbes, and why inject other millions? Further, it takes five days to prepare an autogenous vaccine, a loss of most valuable time.

To give or not to give an antiserum is the question asked every time I see a case of puerperal infection. It came up only very recently, when, shortly after a gentle cleansing of the uterus, with one irrigation, the patient has a severe rigor with elevation of temperature to 105. Anti-streptococcus was immediately ordered from a distant city, but did not arrive until the following morning. In the meantime, the patient's temperature fell to normal and remained so. The serum was not given, but had it been administered at the time of the chills and subsequent high temperature, the result would have been a brilliant endorsement of the serum treatment. The antisera have not yet found a fixed place in the treatment of puerperal infection, although it may be profitable to note the encouraging reports on the use of antiserum given to promote leukocytosis.

Poux tells us his experience with the fixation treatment of Fochier. He injected from 2 to 7 c.c. of turpentine under the skin of the thigh of three different patients. One died and two had a very stormy convalescence. Poux's experience with this very-difficult-to-understand treatment is not different from that reported by some others. In commenting on the treatment, Poux remarks that "the facts speak for themselves," one death and a very stormy convalescence in two cases (*les faits se charge de la response*). It seems that Fochier imagined that an abscess resulting at the point at which the turpentine was injected would attract to itself the streptococci circulating in the blood, and thus limit or "fix" the process. The failure of pus to form at the point of fixation indicated an unfavorable prognosis.

In puerperal peritonitis, the abdomen must be opened and drained. Local collection of pus in the tube, ovary, or uterus should be considered indications for immediate operation.

Pollock recognizes only two indications for operation during the acute stage of sepsis: purulent peritonitis, and pus in the pelvis.

Wormser would incise a pelvic abscess when discovered, especially if it can be reached from the vagina. Watkins tells us that abscess should not be opened for three weeks or until immunity has developed. To find and remove septic thrombi is not an easy matter. Hysterectomy is not indicated except in perforation or abscess of the uterus, adherent and unremovable placental remains, and putrid myoma.

The general treatment must be fresh air and support; elimination must be encouraged by an abundance of water by enteroclysis, if sufficient cannot be taken per os.

To resume:

1. It is a wholesome creed, that every case of puerperal fever is from without.

2. It is well to warn the family of the danger of mechanical transplantation of infecting germs from without during the month preceding confinement.

3. A preliminary disinfection of the vulva and of the neighboring integument is necessary, that the gloved finger or the gloved hand may not transplant infecting germs into the parturient canal from without.

4. A preliminary disinfection of the vagina is futile.

5. A differential diagnosis between saprophytic intoxication and septic endometritis at the outset is but rarely possible. Blood and bacteriologic examinations must be continued but, as yet, are of little practical value.

6. Vaginal douches are of value if infected lochia bathe vaginal or cervical wounds.

7. Uterine irrigations are useful to remove retained lochia and decidua, or in long continued septic endometritis, but they must be given by a skilled hand under guidance of the eye, and preferably anesthesia.

8. The curette is an instrument for evil only, and has no place in acute puerperal febrile conditions, except, rarely, in adherent placenta.

9. Adherent placenta must be removed, uterine irrigation to proceed and to follow its removal.

10. Puerperal peritonitis and pelvic collections of pus demand immediate drainage.

11. Vaccines are illogical, and antisera are not proven.

12. The strength of the patient must be conserved, and elimination encouraged.

The treatment of saprophytic intoxication and of puerperal endometritis may be formulated as follows: (1) Meet the indications of local conditions in the perineum, and in the vagina; (2) if the uterus be enlarged and the cervix open irrigate, and cleanse with the gloved finger; (3) if the uterus be contracted but the cervix open, irrigate; (4) if the uterus be contracted and the cervix closed, do not irrigate; (5) fresh air, support, elimination.

APPENDIX.—Since writing this paper, a most suggestive article, by Duncan, has appeared in the *New York Medical Record*, of Sept. 16, 1911. Duncan would cure sepsis by giving the patient crude pus from his own wound, to prevent infection he would administer to the patient, by mouth, the crude secretion from his freshly made wound, repeating the dose every four hours. Duncan was led to this idea because a dog licks his own wounds and healing is kind. He believes that the dog is constantly taking into his system a crude autogenous vaccine.

According to Duncan, a suppurating wound is to be treated by giving the patient one to five drops of pus from the wound, the five drops to be made up of equal parts of thick, creamy pus, thin serous secretion, and light curettage from the side of the wound. The patient is to receive three such doses, one hour apart.

For acne vulgaris, the contents of several acne pustules would be a fitting dose.

After having recovered from the nausea which the reading of that article produces, one thinks of the motto of Puck, "What fools these mortals be," and then comes the question, "Why not forever prevent puerperal septicemia by administering to the patient one teaspoonful of her own lochial secretion once every four hours?"

Of all the seeming unreasonable therapeutic suggestions of recent years, that of Duncan seems easily first, but even with this, we should preserve an open mind, since that which is incredible to-day often becomes the well known fact of the morrow.

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TREATMENT OF FOREIGN BODIES IN THE ESOPHAGUS *

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Although the esophagoscope has greatly aided us in the management of impacted foreign bodies in the esophagus, it has not and cannot entirely supplant the older methods.

Many physicians cannot spend the time necessary to become familiar with the instruments, and therefore cannot afford to possess the necessary appliances for the use of this new method; and even if they could, their lack of experience would often render esophagoscopy unsatisfactory;

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besides there are not a few cases in which the time-honored methods of operation are simpler, easier and quite as effective as esophagoscopy.

For the removal or dislodgment of common pins and small fish bones from the esophagus there is no instrument more generally useful and effective than the old bristle probang which can be employed with almost perfect safety. For the removal of coins and buttons from the esophagus often nothing is better than the old bent esophageal forceps or a straight smooth, blunt-pointed and toothless 8-inch hemostat.

As a part of the brief paper that I shall present this evening, I have selected from among my case records a few merely to illustrate some of the principal features in the treatment that have been impressed on me in this work, but I will not tire you by routine histories.

L. A. N., aged 24 years, came to my office stating that he had swallowed a pin a few hours previously and that he felt the point a short distance below the larynx. He had swallowed nothing since the accident. No radiograph was taken. I passed a bristle probang well down the esophagus then withdrew it, and repeated the procedure two or three times, but with negative results. I then passed a large smooth olivary bougie but could feel nothing. I then assured him that I thought he would have no further trouble, which proved to be the case.

In most of these cases the foreign body has passed into the stomach before the patient reaches the specialist. Although such patients are usually obsessed with the idea that the foreign body is actually in the esophagus, I have never resorted to the ruse, recommended by some, of showing a pin which I have claimed to have removed; but when I have failed to get the pin or fish bone, have told them that I thought the sticking sensation was due wholly to a wound. When I have shown them the working of the instrument which had been scraped two or three times up the esophagus they have been satisfied. So far as I know, I have made no mistakes in this way, although I think the pin or fish bone has not been obtained in more than 25 or 30 per cent. of all the cases.

I might cite numerous cases of small fish bones or pins lodged in the esophagus, but these are so common that case records would not be of interest. In all of these, excepting where the foreign body has been fixed in the fauces or in the larynx or pharynx, or in the opening of the esophagus, I have found the bristle probang more generally useful for their removal than the esophagoscope and forceps; and for one who has not had experience with the latter method, the bristle probang would, without doubt, be the best. The patient's sensations cannot be considered a reliable guide as to whether or not such foreign bodies as these have been removed; indeed, in most cases the patient will believe that he feels the pricking of the bone or pin for a day or two after it has been dislodged. Therefore, when the bristle bougie has been passed down and up the esophagus two or three times, the operator need not feel disturbed if he has not secured the offending body or if the patient still thinks he feels it at the original site. When we consider how easily quite large bodies may be overlooked in the esophagus, we will realize how difficult it may be to see a pin or a nearly transparent fish bone.

C. M., a child, aged 4 years, swallowed a nickel 2 cm. in diameter two weeks before I saw her. Since the accident, she had regurgitated all solid food but took liquids without trouble. At the time she entered the hospital, the temperature was 99.2, pulse 120. Under chloroform anesthesia I passed the esophagoscope even to the cardiac orifice, but had to search nearly three quarters of an hour before I was able to find the coin, though it was located only a short distance below the cricoid cartilage. The instrument passed by the coin repeatedly without touching or exposing it, apparently because of a fold of edematous tissue. As soon as I could see a small portion of the edge of the coin, I had no further difficulty in its removal. The child made an uneventful recovery.

Formerly foreign bodies that could not be extracted were often crowded into the stomach, and even now if an esophagoscopist was not at hand, this procedure would be proper under some conditions, especially when the body is not very large nor rough and has passed down into the mediastinal portion of the esophagus. As an illustration, I may mention the case of a boy who swallowed a tin whistle that had lodged in the lower part of the esophagus. He was brought to me years before esophagoscopes were attainable, and before the development of small electric lights made them especially serviceable, and long before we recognized the possibility of using a long straight inflexible forceps in the esophagus. I could not secure the foreign body by any attainable instrument and a thoracotomy would have meant almost certain death. With an esophageal bougie I crowded the whistle down a few millimeters each day for several days until it finally passed into the stomach. The boy is now a man and has never had any further trouble from the whistle. However, crowding a foreign body from the esophagus into the stomach should not be attempted at the present day if it is possible to secure the assistance of a competent esophagoscopist.

A boy, aged 6 years, had swallowed a piece of tin a few hours before he was brought to me. The parents had only the child's description of it. The radiograph showed a round piece of tin about 2 cm. in diameter located in the median line just above the level of the clavicles with its flat surface forward. A lateral view gave a shadow, just in front of the spinal column, about 8 mm. thick by 2 cm. long. This was before the days of bronchoscopy. I gave chloroform and passed the bent esophageal forcep with which I tried to grasp the foreign body but failed. I tried also a metallic tube forcep with no better results. I then passed a Maw's large esophageal bougie which went easily into the stomach, but I could not feel the foreign body. Another radiograph was then taken which showed the body lodged in the stomach. The subsequent history was not obtained.

E. S., an uneducated foreigner who had not been long in the country was brought to me about a month after having swallowed a sharp triangular piece of tin 2.7 cm. in length upon each side. I learned that the night after swallowing it his throat had been quite sore and that subsequently he had been unable to swallow solids but had taken fluids without great difficulty. He complained of a sticking sensation just back of the larynx. A large esophageal bougie was stopped by the foreign body 20 cm. below the front teeth. I did not obtain a radiograph but felt confident of the position of the foreign body, and without an anesthetic, passed a bent esophageal forceps with the blades antero-posteriorly. These were opened widely but gently, then carefully introduced to the required depth, where they grasped the body on the first attempt. The body was withdrawn without difficulty. It must have produced some injury to the mouth of the esophagus, but the patient did not report again and therefore I concluded that he had made a good recovery.

Where coins or similar shaped bodies have lodged in the esophagus, if their position can be ascertained by means of an esophageal bougie or a skiagraph, either the bent esophageal forceps or an 8- to 12-inch hemostat may often be successfully employed in their removal. In such cases the exact measurement of the distance from the teeth to the foreign body should be taken, and then with the head in the proper position, the forceps should be introduced down to the immediate vicinity of the body. The blades should then be opened widely but not too forcibly antero-posteriorly, and pushed gently downward about an inch, when they may be closed with great assurance of grasping the offending body. Success may often be attained in this way, even where there is a large amount of edema of the esophagus, and in some cases where the esophagoscope might pass by the foreign body without the operator being able to discover it.

H. W. R. L., a child, aged 2 years and 2 months, was brought to me a week after having swallowed a penny. He had been unable to eat any solid foods since that time, and had some choking upon getting excited. The history stated that after the accident the child sometimes could not swallow solid foods at all but at other times could. The x-ray showed the coin in the esophagus opposite the second dorsal vertebra, with the flat surfaces antero-posteriorly. This was before I had seen an esophagoscope. I passed a long bent forceps down to the region of the foreign body, then opened the blades antero-posteriorly and pushed them gently down an inch and a half when they closed firmly upon the penny which was removed without difficulty.

In a subsequent case I searched diligently for a coin with the esophagoscope, but could not find it, and then using an esophageal forceps, as in this case, removed the foreign body easily.

When coins have been impacted in the esophagus for some time with the production of much edema and swelling, the folds of the esophagus are liable to cover them entirely. It is probable that in the majority of cases where the laryngologist has not been able to find a coin or button with the esophagoscope and has concluded that it has ulcerated through the esophagus, it was simply hidden in this way.

The esophagoscope appears to have been first used by Kussmaul in 1868; next by Mikulicz in 1881, and it was brought to a fair stage of perfection by v. Hacker in 1889; but the means of illumination were not then very satisfactory, and it is probably for this reason that although several operators presented papers on esophagoscopy during the next few years, the operation did not meet with great favor until it was taken up by laryngologists subsequent to Kirstein's publication in 1895 and following Gustav Killian's epoch-making work on laryngo-tracheo-bronchoscopy and esophagoscopy from 1896 to 1899. Since then the management of foreign bodies through the esophagoscope has become an established operation of very great value, and has been adopted by many laryngologists and by some internists who are specializing on diseases of the stomach. It is significant that most of this work has been done by laryngologists, although they cannot claim credit for the discovery and early development of esophagoscopy.

Before attempting to pass an esophagoscope, the laryngopharynx should be thoroughly examined with a laryngeal speculum.

In practicing esophagoscopy it is desirable first to locate the position of the body by a bougie or radiograph; then an instrument of proper length and of a size as large as can be comfortably introduced should be selected. This should be fitted with an obturator which will allow it to pass into the esophagus smoothly and without injuring the soft tissues. Good assistants will generally be needed; one to hold the head firmly, another to attend to the anesthetic if one is used, and a couple of nurses to furnish the other desirable assistance. It is best to place the patient on the back with his shoulders drawn from 4 to 6 inches beyond the end of the table, the head bent backward and supported firmly by the first assistant. Dr. Jackson prefers having the assistant who holds the head sit at the patient's right on a high stool, with his left foot resting on a lower stool bringing his left knee up to about the desired height of the patient's head. The assistant's right arm is passed under the patient's neck and his hand brought up on the left side to hold the gag, which is an essential instrument. The left hand grasps the vertex and holds the head firmly. I have been accustomed to having the assistant on the patient's left side, the anesthetist on the right side, and some one else to hold the gag and possibly the patient's body.

Unless injured or inflamed, the esophagus is not very sensitive; therefore, if the patient has fairly good grit or if he is so small that he may be held quiet, it may be unnecessary to use any anesthetic. Where an anesthetic becomes necessary, cocain from 10 to 20 per cent. in a 1 or 2 to 4,000 solution of suprarenalin will often be found sufficient; but cocain is too dangerous to be employed in any considerable quantity for this operation in children.

K. H., a girl, aged 14 years, swallowed a sand burr the day before she was brought to me. She felt that it had lodged in the upper part of the esophagus on the right side. It caused much pain when she attempted to swallow. I applied cocain and passed a bronchoscope 7 mm. in diameter with an internal light, well down the esophagus and slowly withdrew it searching carefully in every direction but was unable to see the foreign body. I then took a larger instrument which would distend the esophagus and passing it carefully found the burr 15 cm. below the upper teeth. I removed it with a Killian forceps without difficulty.

Frequently in short operations in children under 4 or 5 years of age who are not excitable, no anesthetic is needed; but in children who are frightened or very nervous, or in adults who are not able to stand discomfort, and in all cases where spasm of the esophagus occurs, a general anesthetic will not only be of great help to the operator, but it will save the patient much discomfort and will render the operation less dangerous. Ether is without doubt the safest anesthetic for the purpose, though chloroform has several apparent advantages. I formerly used chloroform with children, and think every one who has employed it would recognize its advantages, provided it was as safe as ether; but as it is not, the operator cannot use it without assuming grave responsibility. It should not be forgotten, however, that complete anesthesia is especially dangerous when there is much dyspnea. In passing an esophagoscope under such

circumstances great care should be taken not to make any unnecessary pressure on the trachea by carrying the instrument too far forward.

The esophagoscope may be introduced by the sense of touch guided by the forefinger of the left hand, or it may be introduced by sight with the aid of a laryngeal speculum (tube spatula). There are several instruments that may be employed for this purpose—Jackson's, Killian's and my own are most familiar to me and all possess the requisite qualities. When the end of the instrument has been passed into the mouth of the esophagus, the patient's head should be brought a little further forward so that it may follow the natural course of the organ without pressing too greatly on the trachea.

The esophagoscope may be illuminated either by the internal or by the external light, but it should not be forgotten that dynamo currents are dangerous because of the possibility of short circuiting; therefore, some form of battery of low voltage should be employed. A battery has been devised by Jackson which leaves little to be desired in this direction. With his battery the small internal electric bulbs or the larger Brüening or Kirstein lamps may be highly illuminated without danger to either patient or operator.

As an illustration of the ease with which foreign bodies may sometimes be removed, I may cite the case of a 5-year-old child that had swallowed a nickel, 2 cm. in diameter, 4 days before he was sent to me. The x-ray showed the foreign body lodged back of the cricoid cartilage with its flat surfaces antero-posteriorly. Under chloroform anesthesia, I introduced a bronchoscope with an internal lamp, quickly found the coin and withdrew it without difficulty with an ordinary tube forcep. The child was discharged the next day.

The principal difficulties experienced by operators in passing the esophagoscope come from incorrect position of the patient's head and faulty direction of the instrument, though sometimes spasm of the muscles of the pharynx or esophagus cause a serious obstacle. The correct position of the patient's body and head and the proper direction of the instrument cannot be better described than in Chevalier Jackson's excellent monograph. The essentials are that at first the head be bent backward, so as to straighten the cervical curvature and bring the axis of the oral cavity in line with that of the esophagus; but as soon as the mouth of the esophagus has been passed the head must be brought slightly forward so that the instrument is directed downward and backward at an angle of about 10 degrees. An obturator that supplies a smooth conical end should always be used unless the instrument is passed by sight. Spasm should be relieved by deep anesthesia.

A few years ago this operation was said to be devoid of all danger, but we now know that even with experienced operators fatalities may occur, and we have reason to believe that with others there may be a large percentage of mortality. In a recent publication Jackson states that in a series of 616 esophagoscopies for foreign bodies which he had collected, it was shown that nineteen deaths had occurred, or a mortality of 3 per cent.; but as he very justly states, this probably indicates the mortality of skilful work in large clinics, and he feels that the deaths at the hands of unskilful

operators must be many times greater than this; indeed, he had confidential correspondence from esophagoscopists giving accounts of eight other deaths. If the inexperienced operator has a successful case he reports it quickly, but if another case terminates fatally, he has nothing to say. Indeed, excepting in hospital service, for obvious reasons, even among fair men, very few of the fatal cases can be reported. He regards the esophagoscope in the hands of rough, careless or inexperienced physicians as a dangerous and often fatal instrument. Yet the traumatism I have found after some unsuccessful attempts at removal of foreign bodies leads me to think that possibly any other instrument, excepting perhaps the bristle probang, in similar hands might be quite as dangerous or even more so. It has appeared to me that there is a large element of danger in too prolonged operations, and I think that an hour ought to be the limit. I have seen only two cases that illustrate the dangers of impaction and of removal of foreign bodies from the esophagus.

The first, a child aged 2 years, was brought to me four days after having swallowed a silver quarter 2.4 cm. in diameter. It was a weak rachitic child with very large head and prominent veins, but no other bodily deformity. I found a temperature of 100 and pulse 110. The blood examination showed 23,650 leukocytes. The child had been unable to take any food since the accident and consequently was very weak. A radiograph showed that the coin was lodged in the esophagus just above the level of the clavicles, its flat surfaces antero-posteriorly, the position in which flat bodies practically always lodge in the esophagus. I was unable to operate until the following day when under chloroform anesthesia, I passed an esophagoscope, and soon found the coin which was removed without difficulty. The temperature steadily increased from the time of the operation for about 36 hours when it reached 108 F. shortly before death. No post-mortem could be obtained. The child had been 5 days without any nourishment before the foreign body was removed and from the temperature and leukocytosis it seems fair to conclude that the operation did not hasten the fatal result. I am confident that no injury was done during the operation.

I saw a somewhat similar case with Dr. Friedberg in which a child, aged about 2 years, had swallowed a coin 2.3 cm. in diameter. It had been in the esophagus 11 days when I assisted Dr. Friedberg in its removal. Considerable injury had been done to the esophagus by efforts at extraction before Dr. Friedberg saw the patient. The radiograph showed the coin located a little above the line of the clavicles a little to the right of the median line. We passed an esophagoscope even the whole length of the esophagus and searched critically and repeatedly for the foreign body, but were unable to see or feel it. Finally when esophagoscopy had proven fruitless, a blunt pointed 8-inch hemostat was passed into the esophagus until it neared the position of the coin when it was turned and the blades carefully opened antero-posteriorly. It was then pushed gently down about an inch and closed on the edge of the coin, which was removed without further difficulty. The temperature had been from 100 to 102.2 before the operation, subsequently it ran from 100 to 104 until the child's death four days after the operation. No post-mortem was obtained.

Notwithstanding the difficulties and dangers attending esophagoscopy for the removal of foreign bodies, the history of this operation for the last few years leaves no doubt that the aid of an experienced laryngologist should be secured in all cases where foreign bodies have become impacted in the esophagus. Where it is impossible to obtain the help of a skilful esophagoscopist, the methods which I have already referred to, such as removal by bent or straight forceps, without the aid of illumination, or

pushing the foreign body into the stomach, are sometimes justifiable. In every possible case, esophagoscopy should be employed instead of the much more dangerous esophagotomy.

H. C., a child, aged 2½ years, had swallowed, six days previously, a fleur-de-lis chatelaine pin which had very rough sides and angles and measured 2.8 cm. in length by 2.1 cm. in breadth. The radiograph showed it lodged in the esophagus just above the level of the clavicles with the flattened surfaces antero-posteriorly. The child had been unable to take any solids but swallowed liquids freely. Under chloroform I used the esophagoscope and after a great deal of difficulty, succeeded in seeing a very small part of the end of the pin. The pin was then easily grasped and removed. The patient made an uneventful recovery.

T. J. E., aged 60 years, was brought to me three days after having swallowed a chicken bone having two ends measuring respectively 2.5 cm. and 3.6 cm. in length, and joined at an angle of about 50 degrees. This patient had not been able to swallow even a drop of water since the accident. Three physicians had made persistent efforts to remove the obstructing body, but without success. I gave the patient ether and upon passing an esophageal tube found that a good deal of injury had been done about the mouth of the esophagus, so altering the appearance of the parts that it was difficult to determine the conditions and impossible to see the foreign body. After a prolonged search I passed a large bronchoscope down the esophagus to the cardiac orifice of the stomach and I searched every portion with the greatest care, but was unable to see any foreign body. I then introduced a large olivary bougie 16 mm. in diameter which passed without obstruction into the stomach and encountered nothing that gave the sensation of a foreign body. Upon withdrawing the instrument carefully, however, I noticed near the mouth of the esophagus a slight sensation which I attributed to the foreign body. I then introduced a large tube and passing it gently and slowly into the upper portion of the esophagus worked it down and up until I finally discovered one edge of the bone lying laterally across the esophagus between two folds of mucous membrane; I seized it with forceps, and though it was quite firmly impacted, withdrew it without difficulty. The patient made a speedy recovery.

An operator must not too readily conclude that something which, to him, appears unnatural, is the wound through which a coin or button that cannot be found has made its way through the esophageal wall, for in the great majority of cases it would be very much more probable that such a foreign body was hidden by a fold of edematous tissues.

The very great mortality from external operations and the almost hopeless chance for success by thoracotomy should encourage the esophagoscopist to adopt every reasonable measure to discover and remove anything impacted in this organ. When large or rough bodies have become fixed in the lower portion of the esophagus, they should be broken up in some way and removed piecemeal, the greatest care always being taken not to inflict injury.

After the removal of a foreign body from the esophagus, if there is reason to believe that any necrosis has occurred, or that any injury has been done, the patient should be nourished by enemas for a few days, and then liquid diet should be given until the surgeon feels confident that the parts have sufficiently healed to allow the ingestion of solid food. For relief of inflammation and as an application to injuries I recommend the administration every three or four hours, of a powder, consisting, for an adult, of 20 grains of subnitrate of bismuth and 20 grains of calcined magnesia. This should be moistened with a few drops of water and

swallowed in this pasty condition with the hope of smearing it over the whole surface. The magnesia is added to the powder for the sake of preventing the constipating effects of the bismuth.

15 E. Washington Street.

SOME ESOPHAGEAL CASES *

STANTON A. FRIEDBERG, M.D.
CHICAGO

In a paper read before this society last year in which I reported the removal of foreign bodies by bronchoscopy and esophagoscopy,¹ one case was cited in which the foreign body was removed from the esophagus by a method in which only the direct speculum and a suitable forceps were used. To this case I wish to add two others in which the same procedure was carried out and also to describe several other cases interesting from various standpoints.

As is well known, the location of foreign bodies which become lodged in the esophagus of infants or young children is usually at some point between the cricoid cartilage and the plane of the supraclavicular notch. This applies more particularly to coins, round whistles and bodies of similar shape. A circumstance that many have experienced and have called attention to, is the ease with which the esophagoscope may be passed in the case of a foreign body in the esophagus without revealing its location. This is due to the fact that the end of the esophagoscope in its introduction impinges on the posterior or vertebral wall of the esophagus especially at its upper part. In doing so it may easily pass behind the foreign body lying under the ledge of the cricoid and crowd it forward to the less-resisting tracheo-esophageal wall. In withdrawing the esophagoscope and making a careful search from below upward it may usually be revealed provided it is not impacted and surrounded or covered by edematous mucous membrane. This latter adds immeasurably to the difficulties of the operation and is seen many times after ill-advised efforts have been made either to remove the body blindly or push it downward into the stomach.

CASE 1.—The first case in which I removed the foreign body by means of the direct speculum was that of a girl, aged 1 year, who had swallowed a penny. In this case I easily passed the esophagoscope without any anesthetic being given. This examination was brief and did not result in my finding the coin. The next day under ether anesthesia I introduced the Ingals speculum into the mouth of the esophagus and to my surprise I could see the upper edge of the penny approximately one-half inch below the end of the speculum. The esophagus was distended from side to side. The coin was easily removed by means of a long urethral alligator forceps. Recovery was uneventful.

CASE 2.—A. P., 17 months old, referred by Dr. D. D. Lewis with a history of having swallowed a penny four days previously. Since that time the difficulty

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1. ILL. MED. JOUR., March, 1911.

in swallowing had increased. The skiagraph showed the coin in the usual location and upright position. The child was placed on the table, the direct speculum introduced into the mouth of the esophagus and the coin seen a short distance below the end of the speculum. It was removed with forceps without much difficulty. No anesthetic was used in this case. The patient lived out of the city and as its condition was good the parents were allowed to take the child home.

CASE 3.—H. K., aged 5 years, referred by Dr. William L. Ballenger. Four days before she had placed a tin whistle in her mouth and had attempted to swallow some water. In doing so the whistle became lodged in the throat. She complained only of a little pain in the throat during the day but at night she refused to eat. The next day conditions were about the same. On the fourth day she was able to drink and retain the first cupful of water she had had since the accident and in addition ate some plums. The pain and sensation of a foreign body in the throat persisted together with pain in the posterior cervical region. She was brought to the hospital on this day. The skiagraph revealed the whistle in the upper part of the esophagus. On examination with the direct speculum, the whistle was easily found but the resistance offered to its removal was so great that it was judged best to give ether. A small amount was administered and the foreign body removed. The whistle measured 2.2 cm. in diameter. Recovery was uneventful. Particular attention was paid in this case to see if there was any laryngeal disturbance owing to the pressure exerted upon the arytenoid and cricoid cartilages by the speculum. Beyond a slight hoarseness which lasted a few hours there was no ill effect. In these three patients the removal of the foreign body was brought about with such comparative ease that I wish to call attention to the method as it seems to me to be a simpler procedure than the use of the endoscope, especially in the cases which I have specified.

In addition to these cases several others, more or less typical in their class, may be cited on account of interesting features.

CASE 4.—M. C., aged 30 years, was admitted to the service of Dr. Joseph C. Beck, July 1, who kindly referred him to me. He gave this history: while eating soup the night before, he felt a choking sensation, as if a bone had become lodged on the right side of the throat. He induced vomiting without bringing about its removal. Later he went to a physician whom he stated felt the bone and worked for two and one-half hours to remove it. He came to the hospital the next morning. Examination showed a good deal of congestion and edema of the pharynx but the bone was not visible. Operation was deferred until a skiagraph could be taken. The patient suffered a great deal of pain and was unable to swallow either fluids or solids. I saw him July 4th and under local anesthesia I introduced the direct speculum and found great edema involving the right lower half of the pharynx, epiglottis and ary-epiglottic fold. In spite of a profuse use of cocaine, so much pain was caused in attempting to pass the esophagoscope that ether had to be given. The whole length of the esophagus was examined but the bone was not found. The patient was put to bed, cold compresses applied to the neck, and an adrenalin spray ordered for the pharynx and larynx. He was kept on this treatment for several days to reduce the swelling in the throat. He improved somewhat and though still suffering pain and discomfort was able to take liquid nourishment. Examination of the throat was then made by the indirect method. The swelling and edema had subsided greatly. A small white appearing area was seen in the pyriform fossa. The throat was anesthetized and a Mackenzie laryngeal forceps was introduced and the folds of edematous mucous membrane separated. The bone could then be seen and although resisting greatly was removed with the forceps. Its measurements were 2.5 cm. by 1.5 cm. Relief to the patient was practically immediate and he was discharged from the hospital the next day. This case is cited to call attention to the necessity of complete and thorough examination of the pyriform fossæ in cases

of suspected foreign bodies in which pain is localized to the upper part of the esophagus. The skiagraphic picture appeared to be uncertain and indefinite. A picture taken subsequent to the operation revealed the error in interpretation.

CASE 5.—This was a child aged about 14 months, referred by Dr. Ballenger. The father brought the child directly from the train to the hospital. The history in brief was that the child had swallowed some small metal toy. At first the father refused to allow anything to be done at all. Finally he consented to allow an examination to be made but gave no opportunity to have a skiagraph taken. Under ether the esophagoscope was passed and after much search the foreign body was found. I managed to grasp it with forceps but in attempting to remove it the resistance was so great that I feared that I might rupture the esophagus. The tube and forceps were taken out and a larger tube inserted. I searched for a long time but could not find it again. Whether it was dislodged and pushed down into the stomach, I do not know. The child was taken out of the hospital before it had recovered from the anesthetic so that no opportunity was given for further examination. In spite of the failure in this case a valuable lesson was learned and that is if one is to undertake these cases he should have the fullest cooperation on the part of the patient or its parents. Skiagraphs should be obtained, careful physical examinations made, the patient should be properly prepared and one must be assured that the needful instruments are at hand. At best the work is hard enough without the additional handicap of uncertainty and inefficient or insufficient preparation.

CASE 6.—J. J., aged about 4 years, some months previously had swallowed lye. He was admitted to the surgical service at the Cook County Hospital in such condition that he could only swallow fluids with great difficulty. A gastrotomy was performed and an unsuccessful attempt was made to pass a bougie from below and also above. Later he was transferred to my service. Under ether a Jackson endoscope was introduced, the site of the stricture found and dilated through the tube with Maw bougies up to No. 11. Dilatation with the ordinary esophageal bougies was then carried out for several weeks without any difficulty. There was no trouble in swallowing fluids and softly prepared foods. His parents took him home and discontinued treatments. He was returned to the hospital in a few weeks with the history of a recurrent increased difficulty in swallowing. He was again anesthetized and the stricture dilated through the tube. The ordinary esophageal dilatation was then carried on with so great improvement that he was soon able to swallow solid food without difficulty. Soon after he was attacked by scarlet fever and was transferred to the contagious hospital. I did not see him after this time. This case is not cited as a cure as it is well known that a long period of treatment has to ensue before we can consider such cases cured. It is cited to show the great practical value of the endoscope in revealing the location of the stricture and the facility with which the primary dilatation was carried out.

CASE 7.—One other case may be cited in which the direct method of examination revealed an irregular swelling in the region of the mouth of the esophagus. An esophageal bougie could not be passed. Examination with the direct speculum showed the mass on both sides of the esophagus with a projecting tongue-shaped growth on the vertebral wall extending almost to the arytenoid cartilage. This had prevented the passage of the bougie. With the aid of the speculum, small bougies could be passed under this edge into the esophagus. The new growth was malignant in its nature and no cure could be hoped for.

Other instances of stricture of the esophagus due to various causes could be quoted but the cases I have cited give a very fair illustration of the value of the esophagoscope and direct speculum both in the matter of diagnosis and treatment.

15 East Washington Street.

A CONSIDERATION OF SOME OF THE DIAGNOSTIC SIGNS AND SYMPTOMS OF BRAIN TUMOR *

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CHICAGO

It were vain indeed within the allotted space of time to commit oneself to the task of an exhaustive or even orderly discussion of the immense amount of comparatively new information dedicated to the problem of brain tumor. I, therefore, ask your indulgence if the remarks to follow appear disjointed and dogmatic.

The neurologist's insistence of the fact that tumor of the brain is a quite common form of lesion of the nervous system seems not to have received its proper valuation by the physician in general practice. For him the likelihood of intracranial growth is still rather too remote and to be seriously reckoned with only after sundry and diverse diagnoses have been ventured, found wanting and abandoned. The knowledge of tumor existing elsewhere in the body, let us say in the abdomen or pelvis, is met with much complacency, whereas the presence of cerebral growths is quite likely to precipitate surprise, confusion and even consternation. A failure to appreciate the true frequency-incidence of brain tumor is in some measure responsible for this attitude,¹ and no doubt the different and more difficult methods of approaching the diagnostic problem tend only to accentuate it.

The aids of direct palpation and to a lesser degree auscultation, so helpful in outlining tumors elsewhere, are of little or no avail in the field of endocranial growths, whose presence and location are determined by (1) general pressure effects, and (2) localizing or focal signs.

GENERAL PRESSURE EFFECTS

Coming at once to the question of the practitioner's regard for the general pressure phenomena, headache, vomiting and optic nerve head changes, I feel that a word of comment is not amiss, and at the outset would wish to be understood that *none* of the general symptoms so-called are specific for tumor. It is quite possible to meet with any or all in brain syphilis, nephritis, encephalitis, meningitis, cerebral arteriosclerosis, hydrocephalus, etc. They distinctly point to brain disturbance; may even strongly suggest brain tumor, but they neither determine that fact nor do they in the least illuminate the problem of localization.

* Remarks made at the meeting of the St. Joseph County Medical Society, South Bend, Ind., December, 1910.

1. Cushing's recent statement relative to the Johns Hopkins Surgical Service shows an increase of from 0.06 per cent. in the first 5,000 admissions to 1.3 per cent. in the last 3,000; also forty tumors in the last 1,000 admissions, a ratio of 1 to 250; also 180 tumor cases, most of which were admitted to his service during the past two years. Bruns' statement is that brain tumor occurs in 2 per cent. of all patients suffering from nervous disease.

Brain tumor *headache*, caused as it is by increased intracranial pressure and traction on the dural envelopes, is far too often ascribed to such causes as syphilis, biliousness, eye strain, migraine, neurasthenia, and a host of irrelevant ills. Assuming that an individual has had syphilis, beyond the peradventure of a doubt that conspicuous fact does not preclude the possibility of subsequent or even concurrent tumor growth of different origin and pathology. In the thoughtless, reckless and endless administration of mercury and iodid, it should be borne in mind that, as a rule, an adequate therapeutic test, controlled by the Wassermann serodiagnostic reaction, will suffice to affirm or exclude the diagnosis of syphilis. Moreover, there is no good reason for believing that a person afflicted with migraine could not develop a new growth in the brain, in which even a differentiation of the resulting types of headache would be highly desirable and important. In this condition, too, the treatment is persisted in for months and, to my certain knowledge, in two instances of slow-growing tumors it was more than a year before the more grave underlying pathology was suspected and confirmed. Particularly is the diagnosis too long deferred or indeed never made in those cases where headache is only occasionally present, or perhaps altogether absent, as may be the case in pontine lesions. In touching on this point I am reminded of a patient very recently seen, in whom findings were noted of intense vertigo, some vomiting (influenced chiefly by posture), perfectly normal fundi, complete fifth, sixth, seventh and eighth cranial nerve paralysis, together with hemiparesis and hemiataxy. Prior to my seeing the case a diagnosis of "Bell's palsy with neurasthenia" had been made. The cerebral character of the lesion, in the absence of prominent general symptoms, to say nothing of its pontine location, seems not to have been suspected.

When brain tumors, therefore, occupy certain locations, headache may be either a negligible quantity or conspicuous by its entire absence. Cephalalgia is present, however, in the vast majority of instances as a genuine intense pain, which the patient may be unable to sharply delimit. I have known it to reach an agonizing degree, especially in hypophyseal growths. It may be constant or recurrent, and that, too, with remarkable periodicity; it may be diffuse or always frontal or always occipital, and yet the area of its exhibition need bear no direct relation to the area of the lesion. When a tumor is located in the cerebellum, the pain is, as a rule, constantly in the occipital region, radiating into the neck and shoulder, with the head drawn to one side or the other. I think perhaps in no other region does the pain seem so constantly referred to the site of the lesion as in the cerebellum. Some cases, however, that come to operation or necropsy tend to show that an inverse ratio is not uncommon, and that we may have occipital headache, with frontal lobe tumor, or vice versa. Particularly misleading is the complaint, not of pain or ache, but of pressure, fullness, or a sense of weight about the head, simulating as it does the lead-cap pressure symptom characteristic of the functional disorders.

Only a word in passing about nausea and vomiting of cerebral origin so-called. I believe that undue prominence has been given it in the tumor syndrome and far too much emphasis placed on its projectile character. Where there is an unusual degree of hypertension, and especially when the symptoms are far advanced, vomiting may be severe, even abrupt, influenced by posture and bearing no relation to the intake of food; but to designate it as projectile is to exaggerate and supply an erroneous notion. Its occasional occurrence is often associated in the mind of the practitioner with some gastric or gastro-intestinal disorder, and thereupon subjected to protracted albeit futile therapy.

In passing, one might mention that the pulse and respiration rate, and the phenomena of yawning and hiccough occasionally attract attention in the brain tumor syndrome, especially if the centers in the medulla are embarrassed by direct or indirect pressure. By some authors it is held that the pulse rate in brain tumor is commonly slow, but others again contend that it is rapid. The mental state, aside from that observed when the intellectual powers are impaired by reason of frontal or prefrontal lobe involvement, is best described in terms of hebetude or a clouding of the sensorium, so aptly referred to by the Germans as *Benommenheit*. That this may under slowly increasing hypertension and pain lead to disorientation, confusion and excitement, I have seen in my own experience.

As to the *fundus* changes in the form either of neuritis or edema, I desire briefly to take into account what some of the most recent literature affords, and obtrude a few reflections of my own. There is no doubt but that the presence of optic neuritis, and still more papilledema (choked disk) constitutes the most significant general objective symptom of brain tumor. When, however, in the presence of other marked focal findings it remains altogether absent or is very late in making its appearance, that of itself is of diagnostic (focal) importance. I do not wish to be understood as saying that an exact localizing diagnosis can ever be made from papilledema, but merely call attention to the value of its absence or delayed accession, for instance, in tumors of the pons, and occasionally large gliomata situated elsewhere. Rarely is optic neuritis or choked disk an early finding in tumor, although in intra- and extracerebellar lesions it invariably appears early and is intense. In fact, its entirely disproportionate intensity to other symptoms is strongly presumptive of an intracerebellar localization. The neurologist is not in the best position, nor even in a favorable one, to discuss the time of onset of disk changes and swelling; it is more than likely that he sees the patient in the late rather than early period of the disease.

A clinical observation of value, I think, is the complaint of transitory blindness, a symptom not always volunteered by the patient, but more often elicited on direct inquiry. When present, it should give rise to a suspicion of optic nerve-head involvement and calls for careful examination.

In following the statistics on the relationship of optic neuritis to intracranial tumors, one is amazed at the varying conclusions drawn

from different sources and series. Leslie Paton's tabulation of 200 cases, in which forty, or exactly 20 per cent., showed no neuritis² at any time during the course of the disease, is one of the later contributions of real merit to the question.

PATON'S TABLE.—RELATIVE FREQUENCY OF CASES WITHOUT NEURITIS

	Per Cent.	
	No neu- Cases. ritis.	with Neuritis.
1. Subcortical	32	14 43.75
2. Pontine	15	6 40.
3. Extracerebellar	19	5 26.3
4. Optic thalamus and midbrain.....	15	3 20.
5. Precentral (excluding case of primary atrophy) ..	(29)	(4) 13.
6. Multiple	7	1 ..
7. Postcentral	25	3 12.
8. Third ventricle and pituitary.....	6	3 ..
9. Temporosphenoidal	13	.. ..
10. Cerebellar	33	.. ..
11. Fourth ventricle	5	.. ..
	200	40 20.

Very worth while are Paton's conclusions as to the incidence and severity of optic neuritis in tumors variously situated in the brain. He states:

1. Precentral tumors are nearly always associated with neuritis fairly severe in type. 2. Postcentral tumors are nearly always associated with neuritis, as a rule moderate, and often of very short duration. 3. Temporo-sphenoidal tumors are always associated with neuritis of about the same degree of severity as in frontal tumors. 4. Of subcortical tumors about one-half develop neuritis, as a rule moderate in degree, and, as in the cases of parietal tumors, frequently of short duration. 5. Optic thalami and mid-brain tumors are almost invariably associated with optic neuritis of very great severity. 6. Cerebellar tumors are constantly accompanied by neuritis of a grave character. 7. Extra-cerebellar tumors, as a rule, develop neuritis of a grave character. 8. Of pontine tumors about one-half only develop optic neuritis, and then only when neighboring parts of the brain, especially the cerebellum, have become involved. The neuritis when it does develop is usually very severe. 9. Ventricular tumors develop a moderate neuritis and, if arising from the floor of the third ventricle, a simple pressure atrophy may replace the neuritis.

An absorbing interest has always surrounded the question of the localizing value of the difference in degree of optic neuritis in the two eyes, as pointing to the side of the tumor. The neurologist seldom sees fundus changes run their entire course under his immediate observation; nor does the ophthalmologist often have the opportunity. Hence large and at once reliable statistics on this point are not so readily accessible. However, in the recent literature we find a few authoritative expressions. For instance, Paton, from an observation in a series of thirty cases, with neuritis developing while the patients were constantly under his observation, concludes that "we cannot assume that a difference in the amount of neuritis is a sign of localizing value." Horsley, expressing himself in regard to the special significance of the eye symptoms in his case, states that the greater degree of neuritis or papilledema was "ipsilateral;" that is to say, on the same side as the brain lesion. Further opinions

2. When English authors employ the term neuritis it is intended to convey the idea also of edema and choked disk. In that sense it covers all degrees of swelling.

on this point of homolaterality of disk edema and tumor are ventured by Bordley and Cushing, who state that in 70 per cent. of their cases the greater swelling was on the side of the tumor. Martin, in his analysis of 601 assembled brain tumor records, found this to be true in a ratio of 71 to 29. In their earlier reports, de Schweinitz and Holloway reached pretty much these same conclusions, but more recent inquiry had led to some revision. Important as the degree of disk edema may seem, nearly all investigators, and especially Horsley, Cushing and de Schweinitz, raise to far greater importance the necessity for recognizing the very beginnings of involvement, that is to say, in which eye and in which portion of the disk the first changes susceptible of detection occur. This means that a painstaking charting of the visual fields and closer inquiry into the light and color sense are of genuine value in establishing an early diagnosis. The condition defined as pseudo-optic neuritis due to refractive error should always be borne in mind; neither it nor neuritis from accessory sinus disease should be misleading if due care be taken.

In this connection I wish to add a word concerning the contentions of Bordley and Cushing, who, by their chartings of the visual fields, have given us some new and apparently reliable criteria for the early diagnosis of brain tumor from the eye side. These show a contraction to form and an inversion or reversal of the normal color formula. Dyschromatopsia, as it is called, has ever since Charcot's studies been regarded as distinctive and almost pathognomonic evidence of hysteria. Bordley and Cushing have no doubt given it a wider interpretation if their interlacing of the fields, recently described, is in so many cases noted as an early finding in brain tumor, even considerably antedating the appearance of fundus changes.

I recall the case of Mrs. R. C. H., aged 23 years, seen in April, 1910, who for more than a year was treated by several physicians for "hysterical and neurasthenic symptoms." The case was instructive because of long-standing, unchanged general symptoms. Headache, more or less persistent, confined to the temporal region; for the past three years characterized by increasing severity at each menstrual period, and for the past two years almost constant and shifting to the back of head and nape of neck. Easy fatigue and excessive emotionalism led to the inference of a disturbance entirely functional. Blurred vision in both eyes for six months prior to examination; also slight vertigo, and an occasional sense of something bursting in the right ear. Never any nausea or vomiting. A complete physical examination, including that of the sinuses, was negative; the fundi, however, revealed optic neuritis, distinct in both eyes, but more advanced in the right. Radiograms to ascertain turcican deformity negative. Urine negative. Wassermann and spinal fluid negative and antispesific treatment ineffective. Patient was observed steadily for two months, and at frequent intervals thereafter, without noting any change in these findings. The visual fields, charted by Dr. Mortimer Frank, showed narrowing and some interlacing. In the presence of so many inconclusive signs and symptoms, the neuritis and dyschromotopsic fields add weight to the conviction of a slow-growing

but non-localizable tumor, and surely removes the suspicion of its being a functional disorder.

In this case, as in all others where the fields are taken and show no marked change, one should make due allowance for difference in light, difference in the degrees of concentration various patients show, their accuracy in answer and the intellect on the whole.

If I have dwelt unduly on all these points and entered somewhat on their controversial aspect, it is, after all, because of the practical bearing they have on vision, the preservation of which is of incalculable importance in every case when the well-nigh inevitable procedure of decompressive or radical surgery arises.

LOCALIZING SIGNS AND SYMPTOMS

It should not be difficult to realize that in brain tumor diagnosis the faculty of analysis finds its best exercise in the direction of the localizing or focal signs. To give an adequate account of all such far transcends my present purpose, but to note a few with particularity and generalize as to others is, I believe, indicated. There can be no doubt but that our increasing knowledge of the higher specialized cerebral functions in well-delimited areas or centers, a knowledge derived from both laboratory experiment and clinical study, has led to correspondingly more exact and accurate diagnoses of intracranial lesions. Since epoch-making investigations are in a modern sense not more than forty years old and the greater part of our exact information has come to us only in the past decade or two, physiologists may point with pride to their activities and advances in this field. Of course, many of the essential facts concerning brain function (exclusive of the higher psychic processes and speech) have been established through animal experiment and if we bear witness to the excellence, the thoroughness and reliability of the investigations carried on by Horsley, Sherrington and Grünbaum, Cushing and others in the matter of brain localization in animals, we cannot help but concede their importance and value in correlated work on the human brain.

If we accept the statement made by Collier, in *Brain*, not so many years ago, that all the cerebellar tumors observed during a period of five years at the National Hospital, Queen's Square, London, were properly localized *intra vitam*, as shown both at the time of operation and necropsy, and add to that testimony some of the brilliant surgical successes recorded only within the past year or two in an intracranial field formerly regarded as wholly inoperable (I refer to the hypophyseal region), we have increasing good cause to be optimistic. And yet brain tumor signs not infrequently cause the diagnostic problem to fairly bristle with uncertainties and contradictions. Bruns' experience should be of great interest to all. In a total of 210 cases he made either an incorrect diagnosis or no diagnosis at all in fifty-three cases. That would mean error and failure in about 25 per cent. Such a margin of error, which, all things considered, is not wide, will hardly be overcome so long as we recall that large areas of the brain remain *silent*, and that intracranial growths may by *indirect* pressure through vascular, ventricular

and foraminal mechanisms cause remote secondary symptoms, by the Germans called Fernsymptome, in addition to those considered proximate and primary in character. Especially confusing are these focal or local signs when they appear late in the course of the disease, and the patient in turn comes late for the neurologic opinion. Right here I would call the attention of the surgeon, who very likely sees the patient at a still later period, to the fact that the neurologist is seldom the first person to be consulted in these cases. It is deserving of emphasis that the general practitioner sees these patients first and is likely to be dilatory in taking counsel. In the period of onset and during the *early* stage, localization of great exactitude is made possible by reason of primary pressure effects; embarrassment in making a diagnosis may thus be avoided, and perhaps a better prognosis held out to the patient. The fact is that the invasion symptoms are insufficiently valued, and the march of the tumor signs too little observed. When secondary pressure effects cloud the clinical picture, the localizing signs that earlier in their appearance were trustworthy, become false; they lead to erroneous conclusions, and too often to unfortunate therapeutic advice. Just what constitutes an early or late pressure effect will depend on the character of the tumor, whether rapid or slow-growing. As Collier correctly states, "a local sign appearing three months after the onset of symptoms would be a late sign in a case where the general symptoms were of great and persistently increasing severity, and, on the other hand, it would be an early sign in a case where the general signs were not obtrusive and increased slowly."

SPASM

The occurrence of spasm so often raises a query in the mind of the practitioner as to the existence of a gross lesion of the cortex that one's critical attention directed at this symptom seems justified. I believe that the distinction, so far as we recognize it, between genuine idiopathic epilepsy and the Jacksonian or symptomatic type can never be too emphatically stated. Likewise is reiteration as to the importance of Jacksonian spasm in determining operative interference desirable. I think it always well to remember that consciousness lost early, before the convulsive twitchings are under way, speaks for the genuine form, while if manifesting itself late, that is, when the seizure has almost spent its force and is quite at an end, points to the symptomatic type. The moment at which unconsciousness sets in is, therefore, of the utmost importance. Even though a seizure be made up of merely a few twitchings confined to a small muscle group, if unconsciousness occurs early the evidence weighs in favor of its being a case of genuine epilepsy and not Jacksonian. The fact of seizures beginning in a single part, apparently as a monospasm, and rapidly extending so as soon to include either one-half of or the entire body, is far too often incorrectly interpreted as Jacksonian. If adequately observed, they will prove to be genuine epilepsies initiated with Jacksonian spasms. The true Jacksonian fit is further to be differentiated by the local weakness, even paralysis, that supervenes after the seizure. Paresis in the part convulsed should therefore always be looked for.

There are plenty of cases which call for repeated examination and careful study before one can decide whether a local spasm is the expression of an organic lesion (let us say tumor) or to be classed as the signal symptom of a genuine epilepsy. Especially difficult is the solution of the problem if dependable on a single examination.

The presence of monoplegia or a monoplegic progression toward hemiplegia should, if associated with the history of local spasm, excite suspicion of a tumor in the cortical motor area, but the possibility of circumscribed meningitis, meningeal hemorrhage, polioencephalitis, depressed fractures, the late focal necrosis following vascular occlusions and cerebral arteriosclerosis, must always be borne in mind. Be it understood that the cerebral arteries may undergo marked sclerotic change without there being any evidence of such a process in the peripheral vessels. In such instances to recognize the concomitants of arterial change, as found in the heart, kidneys and mental state, may minimize diagnostic error.

In support of the statement that Jacksonian seizures arise not solely from the motor cortical zone, we note the trustworthy observations of Weisenburg, Collier and Holmes and Stewart, which go to show that they were exhibited in some of their cases of cerebellar and cerebello-pontile tumors.

Just a word concerning cranial nerve symptoms in the tumor syndrome, since their proper valuation would require that they be dealt with in a separate paper.

In suspected or known tumor the involvement of the cranial nerves affords a prolific source of error in focal diagnosis. Of the cranial nerves the sixth, I believe, by reason of its frequent involvement, has had its localizing importance in the tumor syndrome over-emphasized.

Ever since Collier, in his splendid paper on "False Localizing Signs of Brain Tumor," pointed out, among other things, the error of placing too much stress on abducens paralysis as a true focal sign, there has been a more or less active inquiry as to the reliability of other cranial nerves in this regard.

As concerns the abducens, which has a longer and more exposed intracranial course at the base than any other cranial nerve, if isolated sixth paralysis develops early it may then be a direct tumor sign. If, however, in accordance with Collier's explanation, the cerebellum and medulla are displaced into the foramen magnum by a tilting of the entire brain, due to the constantly increasing size of a tumor in any region, then its action on so long a nerve will occur, with the inevitable result of paralysis. An associated paralysis of the seventh and eighth gives it increasing diagnostic value. The auditory nerve, by reason of nerve deafness, enjoys the distinction of having localizing importance in tumors, more especially of the cerebello-pontile angle, that quadrilateral space between cerebellum, pons and medulla, in which the fifth, sixth, seventh and eighth cranial nerves are located. As a matter of fact, not a few of the tumors arising in this area spring from the auditory nerve as fibromata, and are, together with the cysts developing in this extracerebellar location, particularly accessible and amenable to operative interference and recovery.

SUBCUTANEOUS EXTIRPATION OF CERVICAL GLANDS *

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CHICAGO

Professor Dollinger of Buda-Pest conceived and perfected this operation. He gave it the name of "subcutaneous removal of glands of the neck." I am inclined to believe this term rather vague and leaves one in a quandary unless some sort of an explanation of how the operation is done accompanies it. I believe a better term for this particular operation would be "The Removal of Cervical Glands or Tumors from the Neck without a Visible Scar." There are a great many cases of enlarged glands of tubercular origin which do not respond to any form of medical treatment. But many glands are erroneously diagnosed as tubercular when they are not. Surgery brings the only relief to these cases, as they will not respond to any other form of treatment.

My experience is, that it is exceedingly difficult to determine microscopically which enlarged glands are of tubercular origin and which are caused by some other remote infection. Our only aid to determine this is the microscope.

I do not wish to be misunderstood regarding this operation as I positively do not recommend it for all cases of enlarged glands of the neck. For instance, suppurating glands with fistulæ or those that are undergoing an acute inflammation are not suitable cases for this sort of an operation. I do not advocate this method in preference to the open method for all cases. But I do recommend Dollinger's method of operating so as not to leave a visible scar in such cases as I shall be pleased to demonstrate at the conclusion of my remarks.

There are any number of these cases, especially among the fair sex, who carry around with them unsightly tumors of the neck rather than be disfigured by an operation. They would gladly seek relief in surgery if some assurance were given them that a visible scar would not remain.

With this method glands can be removed from any angle of the neck. I know whereof I speak, because this operation has been performed successfully many times by Professor Dollinger and myself. I have tried to drain an abscess in a few of these cases without the desired results; therefore I cannot recommend the invisible incision for glands that have formed into a pus cavity. The removal of glands which have already broken down and have become caseous in their center is not a contra-indication for their removal by this method.

It was my pleasure a few years ago to exhibit some cases that I had operated on at a clinical meeting held by the Chicago Surgical Society at the Cook County Hospital. I regret to say our surgeons have not received my communication and exhibition of cases enthusiastically; otherwise, I believe, there would have been many more successful cases reported by our colleagues in surgery.

* Read before the joint meeting of the Chicago Medical Society and the North Side Branch, Oct. 18, 1911.

I have spoken to quite a few operators in regard to this method and the great fault they find with this operation is the fear of hemorrhage in a wound that cannot readily be reached. This fear would soon be allayed if they would give this method a fair trial. It certainly is not as easy as the open method, as it requires an abundance of patience, dexterity and a cool head.

This operation is certainly not one for theatrical demonstration, as it must be performed slowly with the operator as the only spectator. Time should be no object and haste is dangerous, but when the operation is finished, and one can see the postoperative result, it will be seen that an operation has been performed without a visible scar remaining, and the operator will have merited the everlasting gratitude and blessings of the patient.

There are thousands of these cases which are neglected by the patients because they shun the scar they feel sure will remain, not the operation itself.

The day before the operation, the patient's head, face, ears, nose, mouth and neck extending down below the mammary line, should undergo a thorough preparation. The hair should be shaved where the incision is to be made.

Before commencing the operation, the location of incision should be marked with tincture of iodine. The anesthetic should be aseptic. The position of patient's body on the operating table should be on the back and the head extended over the end of the table, as this position of the head will allow the blood to flow downwards, thus not interfering with the operator's view. An assistant should hold the head and be ready to turn it in any direction necessary. The operator's position should be on the side of the operative field. A headlight should be worn if necessary but this can be dispensed with if there is sufficient natural light.

The incision is commenced behind the ear on a level with the external auditory meatus, following the hair line and varying in length from 2 to 2½ inches extending through the skin and superficial fascia. Through this opening the skin is now dissected away either bluntly or aided by some sharp instrument until the glandular enlargement is reached. The extirpation is now commenced. If there are any vessels, nerves or muscles in the way, they can be pushed aside with the fingers or some dull instrument. This is at times easy of accomplishment and again very difficult, requiring a great deal of patience. In case the diseased glands are adherent, it is often necessary to draw the mass nearer to the opening of the wound in order to facilitate safe and easy enucleation. In such cases, the assistant holding the head should turn same toward the wound while another assistant retracts. Sometimes in drawing the mass toward the surface, glands that have undergone caseous degeneration will break and the cheesy material contaminate the wound; this will also happen when the open method is used and will not interfere with primary union, as was observed by Professor Dollinger and myself. When the operation is finished, a small rubber tube, gutta-percha tissue twist, or cigarette drain is carried to the bottom of the cavity for drain-

age. The remainder of incision is closed. The drain should be left in about six or eight days. There may be some serous fluid discharging after the drain is taken out which will disappear in several days. In some of the cases, I closed the wound without drainage. It may sound strange but it is a fact, nevertheless, that hemorrhage with this method is reduced to a minimum. Most of the operation is done by blunt dissection and artery forceps are seldom required. The time required for such an operation depends on the location and number of diseased glands to be removed, complications, and the dexterity of the operator.

Professor Dollinger claims to complete the operation in one hour and five minutes. In case the wound should suppurate, after the drainage is removed, it can be reopened through the original incision with a slender forceps. The bottom of the cavity is reached and a small counter puncture made. The counter drainage is also often advisable in cases where the involvement is extensive and reaches down to the lowest part of the neck. The scar of such small puncture is scarcely visible.

The following cases were operated on by the Dollinger method:

CASE 1.—Mrs. G. F.; aged 26 years; married. Operated on five years ago. She was single at the time of operation. Her glands were markedly involved on the right side extending down to the clavicle. The glands at the angle of the jaw were as large as a small egg. She left the hospital in two weeks after the operation.

CASE 2.—Mrs. A. S.; aged 33 years. Operated on Sept. 10, 1907. The glands of the right side of the neck were enlarged in both anterior and posterior triangles. She was subject to "sore throat" during the fall weather. No other sickness before. She left the hospital in two weeks.

CASE 3.—Miss K. K.; aged 27 years. Operated on about four years ago. She had marked enlargement of the glands in the anterior triangle on the right side of the neck along the lower jaw. She had the enlargement for about two and a half years. Had measles and jaundice when a child. No cough. Microscopical examination of glands, tubercular.

CASE 4.—Miss I. S.; aged 20 years at present. Her first operation was performed by another surgeon on both sides of her neck when she was three or four years old. Four years ago I was consulted for extensive involvement of both sides of the neck. Her glands were very large; situated in front and back of sternocleidomastoid muscles on both sides. Operation consisted of enucleation of all palpable glands from both sides through an incision extending from ear to ear along the hair line. This is the only time this form of incision was used. About a year ago, a small broken-down gland under her left ear was lanced and about four weeks ago another gland under the right ear was opened. She has now a swelling of one small gland under her right ear. Her tonsils are enlarged. She never had sore throat. Aside from her adenitis she was always well. Microscopic examination of removed glands demonstrated a tubercular process.

CASE 5.—Miss E. P.; aged 15 years; school-girl. Operated on two and a half years ago. Swelling was first noticed on right side of the neck two years before the operation. She had no pain. Had sore throat which necessitated her remaining in bed for two weeks. Following this, the growth appeared. Tonsils were removed three to four months after illness. Microscopic examination showed the growth to be non-tubercular.

CASE 6.—Miss M. L.; aged 20 years. Family history negative. Personal history: had most of the diseases of childhood; "sore throat seven times." Enlarged glands were situated on the right side of neck extending down to the clavicle. Ten months of medical treatment was of no avail. Was operated on in December,

1910. As you will see from specimen glands were removed in one chain. Microscopic examination—not tubercular.

CASE 7.—S. C.; aged 14 years; school-girl. Family history negative. Large thyroid. Glands involved occupied all angles of the left side of neck. They were apparently mobile but very difficult of removal during the operation. This patient was treated medically for about six months without any results. She was operated on May 26, 1911; well June 19, 1911. This was a very trying and tedious operation. No examination made of glands.

CASE 8.—Miss R. F.; aged 12 years. Family history negative. Grandfather on mother's side had asthma; died at the age of 65. Operated on in March, 1911. Enlarged glands on the right side of neck at angle of jaw. Growth very prominent, size of large egg; four months' standing. Resisted medical treatment. She is subject to sore-throat. Microscopic examination, tubercular.

DISCUSSION

Dr. A. J. Ochsner: These very brilliant results speak for themselves. If you or I had this condition of the neck, or if some members of our family had it, and we could have a choice between this result and the scars which frequently ensue, there is no doubt which one we would choose. When Prof. Dollinger's paper was reviewed in the *Centralblatt für Chirurgie*, I attempted the operation a few times and I think that for lack of patience I abandoned it before I had thoroughly tried it. That was one reason. Another was that many years ago I found that the scars in these cases are due to the fact that there is more or less tension upon the skin sutures themselves, and that by making a subcutaneous catgut suture, not the subcuticular suture that Prof. Mall introduced some fifteen years ago, but simply by applying a few sutures subcutaneously, so that the superficial sutures have no tension whatever, and then by using the superficial sutures very loosely, I could succeed in having scars which would not show after a year, so that in several hundred of these cases I have made use of this form of treatment. By applying this subcutaneous catgut suture to take off the tension and then using horsehair for the skin sutures without tension the amount of scarring is so slight that you cannot see it in a year, even in a low dress, but it is nothing like the beautiful result Dr. Frank has shown us, and I shall now follow his method to see whether I have the necessary patience and skill to carry it out. In connection with the treatment of these glands, I would say that the most important point consists in the removal of the primary infection. Early in my career in the surgical field, while acting as assistant, I constantly came in contact with cases which had been operated on for tuberculous glands and in which the patients later developed pulmonary tuberculosis. Then came the work of Fenger, in which he advocated the absolute clearing of the neck, beginning at the clavicle and ending at the mastoid process, and having no regard for any structure except the pneumogastric and spinal accessory nerves, and still we saw these cases of pulmonary tuberculosis develop. I believe that this occurred because the infected tonsils and adenoids had not been removed at the time of operation, and the patients had not received proper dietetic and hygienic after-treatment. By adding these features to the treatment Dr. Frank has advocated we will have ideal results.

Dr. Feingold: The enormous benefit this class of patients derive from this unique operation you can readily see for yourselves by examining the cases presented here to-night and also the specimens that were removed. There are a large number of cases in need of this operation that do not readily consent to one on account of the scar, which is in the eyes of the public an indelible mark of scrofula. In young women it is sometimes a bar to marriage, and for some it is hard to get employment, especially as servants. I do not see why an operation of this kind cannot be carried out. It has all the advantages of the open method, you can remove all the pathologic conditions, and at the same time it leaves the patients without any scar, which is one of the most important factors in the operation. If one of these patients would escape a very serious injury and only

receive a lacerated wound of the neck resulting in a scar, that patient would be entitled to big damages from the liable party. Why should not patients who need an operation of this kind have redress for an inflicted scar that could be avoided?

Dr. Dollinger has reported 128 operations up to date, and in only about 10 per cent. of the cases did he resort to counter-puncture. The point Dr. Ochsner brought out is a fact amply demonstrated by one of Dr. Frank's cases. I saw her a few weeks ago and found that she had very large tonsils. She was operated upon twice before by a surgeon by the open method. About three or four years after Dr. Frank did the Dollinger operation there was a little suppuration behind one of the ears which was lanced. A few months ago another suppurating gland appeared under the other ear, and I would not be surprised if this young lady would have recurrence oftener because the original source of infection is still there, and after that is removed I think she will probably be free from further trouble.

Dr. Wheaton: I have listened with a great deal of pleasure to this paper, and I think this excellent operative technic should be followed. I think most surgeons here present will agree with me that surgery does not offer a great deal in the treatment of true tuberculous cervical adenitis. It is a mutilating operation and no surgeon can guarantee immunity from return. In connection with the discussion I wish to say that the inoculations with tuberculin which I have carried on at Rush Medical College and also at the Iroquois Memorial Hospital in the treatment of these cases has led me to believe that it is almost specific. We have not reported a series of cases as yet, but tuberculin as a therapeutic agent is worthy of trial by all physicians. I think these patients should be placed on tuberculin before being sent to the surgeon, beginning with .0001 mg. of old tuberculin and gradually increasing until the patient is taking 1 c.c. or $\frac{1}{2}$ c.c. of the 1 per cent. solution without reaction, showing that they have developed a marked immunity. I think in connection with this operation or rather after-treatment the dietetic and hygienic measures mentioned by Dr. Ochsner should be employed, and in addition thereto every case should be treated by the method I have mentioned following operation.

Dr. Tydings: Any one who has been in the practice of medicine for a number of years and followed a series of cases where the removal of enlarged lymphatic glands had been done by surgical intervention must have noted their frequent recurrence.

For some years I have used tuberculin in these cases and had I known the discussion upon the use of it would come up to-night I should have had some cases here to exhibit. Patients who have come to me, some of whom had been operated upon, others not, but all with enlarged lymphatics seeking relief for other throat manifestations of tuberculosis, were cured alike of their throat troubles and enlarged lymphatics by the use of tuberculin.

It is well to remove tonsils and adenoids where you have enlarged lymphatics, but in adults this is not enough. That work must be supplemented by the use of tuberculin. Something which will eradicate the disease from the system. I have used more of and prefer to use the preparation known as tuberculin "R" residue, the so-called new tuberculin, though I must have used it for almost fifteen years, perhaps longer.

By its use I have been able to get results which I never was able to obtain by surgical procedures.

Dr. Buford: I have had a rather large experience in connection with neck work, especially that which concerns tubercular adenitis. It seems to me that we should understand the facts concerning glandular enlargements in the neck and something of their anatomy in each instance; and that we should not generalize, as has also been suggested by Dr. Frank. The facts are that infections of the glands of the neck are, broadly speaking, pyogenic or tuberculous. The pyogenic infections usually develop more rapidly and suppuration is likely to occur in a relatively short time, if it occurs at all. The infection is usually limited to a comparatively small group of glands which become confluent and

suppuration is confined to this group. When these are located in the posterior triangle of the neck sub-cutaneous enucleation ought to be quite safe and I certainly advocate the treatment suggested to-night, but unfortunately, in my experience, these infections usually occur in the anterior triangle of the neck, especially in the sub-parotid, where because of their vascular relationship I do not think sub-cutaneous enucleation is safe. The more virulent the infection the more likely we are to find enlargement of the lymph glands of that chain; but this enlargement quickly subsides upon removal or drainage of the infected focus and it must be a very rare occurrence for radical adenectomy to be indicated in cases of this kind.

We have an entirely different picture when we deal with tubercular adenitis. When one sits by and sees the triangles of the neck exposed again and again for this affection, he will soon learn the rarity of limited glandular involvement, for so often entire chains are involved. One will usually find the whole chain in the jugular sheath showing distinct tubercular changes, perhaps less often the chain lying anterior to the trapezius in the posterior triangle; sometimes both chains are simultaneously involved and not uncommonly in addition to this infected glands are scattered irregularly throughout both triangles of the neck, lying just beneath the fascia. Now then, suppose we have an involvement alone of the chain lying along the trapezius, I feel that this operation would be safe. I do not feel that it would be safe to subcutaneously enucleate those glands which lie in the jugular sheath, because of the important structures in immediate proximity. In open operations, I have again and again seen the jugular vein torn open while trying to remove adherent glands and have myself unavoidably opened the subclavian vein in the same effort. This accident again occurred in my presence when an operation was being performed by the best neck-worker it has been my privilege to see. We cannot tell whether these glands are adherent or not, or how adherent they are until the field is exposed. While performing simple enucleation of these glands, we often find to our surprise, more or less involvement of the entire chain in the jugular sheath. This finding is so common that it has encouraged some good neck workers to almost completely abandon simple enucleation in cases of known tubercular adenitis and to adopt radical adenectomy instead.

In making a preliminary examination of these patients when the larger glands only are palpable, if the patient's face is turned to the opposite side and the bulbs of the fingers are placed along the posterior border of the sterno-mastoid and pushed beneath it, it is surprising how frequently and easily one will detect enlarged glands in the jugular sheath which are otherwise overlooked.

I think the cases here shown are splendid examples of results obtained from this operation. I do not know that any of them are examples of subcutaneous enucleation of a chain of tubercular glands along the jugular sheath. I shall try to perform the operation in cases in which I think the glands are favorably located for its performance and I am sure that I shall find an opportunity to see Dr. Frank perform this operation.

Dr. Carl Wagner: It is not more than about ten years ago that one of the greatest operators in this line of surgery insisted that in every operation for the removal of the glands of the neck the sterno-cleido-mastoid muscle should be severed in order to expose the field of the operation well enough to enable the operator to find and remove all glands, as some of them are often flat and hidden under and between the great blood-vessels of the neck; in some of them even the scaleni muscles were one or all divided, in order to accomplish a complete resection of the glands. When about eight years ago Dr. Ferguson not only proposed but also removed the entire chain of the cervical glands without division of the muscles the attempt was somewhat objected to as not being feasible for a thorough job. The demonstrations of the cases of Dr. Frank's have shown to satisfaction that this not only can be done with the ordinary incisions but even with one which will be afterwards invisible. In regard to the almost invisible scars which we obtained in some cases with subcutaneous suture with catgut we

must after all confess that they are only almost invisible and not entirely invisible as in the beautiful cases presented to-night, for which we must give the doctor every credit as the most competent exponent of the Dollinger operation in this country.

Dr. Frank (closing discussion): I have not very much to say. You have all seen the cases and you can judge for yourselves. As I said in the paper you must select cases for this operation. It is not an operation for all tumors and glands of the neck. In answer to Dr. Buford about going along the sheath, I will say that in this case I showed the glands were right along the sheath; I could see the bifurcation of the carotid artery and vein, and this is the young lady, and you can see the result. This case was non-tubercular. The little girl had a large mass occupying the anterior angle reaching back partly into the posterior. That was of a tubercular character, and there has been no return. Now this case Dr. Feingold spoke about was a return of the small glands after she was operated on by the open method, incision not made in one continuous line, but here and there the glands Dr. Feingold spoke about were not in any area where I had operated. It recurred in the line of the old incision, made probably eight or nine years before I operated. In the area I operated on none have returned. Now about tuberculin? I would be the first one to accept the tuberculin treatment if they could show me results. I have seen tuberculin used in tubercular disease of different parts of the body, but I have yet to see the first case that has improved or gotten well, and the treatment was not carried out in my own hands, but I have referred them to others, without any result. It would be a happy thing for the thousands of people who have these enlarged glands if they could be cured without any operation, and I am sure I would be the first one to accept it, and I hope some day we will have a treatment for tuberculous glands without operation, for I believe in cosmetic effects, whether in women or men. I do despise to see a scar made unnecessarily. Tuberculin treatment will not help these pyogenic tumors. These will have to be operated on, and these are cases where we can expect there will not be any return of the enlargement after we once remove them.

SUPRAVAGINAL HYSTERECTOMY WITH THE PRESERVATION OF THE FUNCTION OF MENSTRUATION *

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CHICAGO

The fact that menstruation has been preserved in many cases where supravaginal hysterectomy has been performed has been evident in all operating rooms. This result, however, has been the exception, and in most cases where it has occurred the surgeon has been quite surprised that his patient has continued to menstruate.

The reason, no doubt, for this continuation of the menstruation is that the operator, unintentionally or unknowingly, perhaps, followed some such plan as here detailed by which the preservation of menstruation following supravaginal hysterectomy is quite certain.

The factors which enter into the function of menstruation are endometrium of the body of the uterus, ovarian tissue, blood-supply and probably nerve (sympathetic) supply. Thus, in planning to preserve this physiologic function, it is necessary to preserve these tissues.

* Read before the Chicago Medical Society, Oct. 18, 1911.

In the cases which are here reported it is shown that the evidences of menstruation are present after a supravaginal hysterectomy where:

- (a) The uterus has been amputated distal to the internal os.
- (b) Where ovarian tissue is left.
- (c) Where the uterine artery is ligated distal to the level of the internal os of the uterus, leaving blood-supply for the stump.
- (d) Where the sympathetic nerve supply of the broad ligament has not been greatly disturbed.

It is not claimed that the menses will continue in the amount nor in the physiologic value that existed prior to operation, but it is claimed that there will be menstruation sufficient to produce the psychical effect on the patient necessary to greatly diminish the possibility of many cases of hysteria, and this added to the value of the internal secretion from the preserved ovarian tissue will prevent the untoward after-results so greatly to be feared which often follow the ordinary hysterectomy.

To secure these expected results the following facts are of the greatest importance:

1. Selection of cases.
2. Preservation of sufficient endometrium of the body of the uterus.
3. Preservation of ovarian tissue.
4. Preservation of blood-supply for the uterine stump.
5. Sparing of the sympathetic nerve supply in the broad ligament.

1. This technic is not applicable in cases where good judgment selects a total hysterectomy as the proper treatment, e. g., malignancy, extensive wounds which extend into the cervix, etc. It is indicated for fibromata of the body only, but more especially in the cases of infected uterine tracts and those of subinvolution of the uterus, with the lacerated perineums and cervixes which produce the fagged-out, broken-down women familiar in every practice. Also for exceptional conditions, as some forms of rupture of the uterus, gunshot and stab wounds of the uterus and pelvic adhesions.

To summarize, it might be claimed that this should be the technic of choice for all cases where the uterus is not to be totally removed.

2. The endometrium is necessary for menstruation. Whether it be that the activity of the endometrium is the primary cause of the phenomenon due to its stimulating ovarian activity, or whether the endometrium functions on account of reflex action from the ovarian secretion transferred through the sympathetic nerves located in the broad ligament, is immaterial. To preserve menstruation some of the endometrium of the uterine body must remain, as from this tissue the menstrual blood develops.

It is here that the question of performing a total hysterectomy for cases of old gonorrheal infections of the uterus may be argued.

In favor of high amputation there are the following facts:

(a) A limited accessible amount of endometrium remains which it is possible to treat locally with success.

(b) The influence of a greatly increased blood-supply to a limited amount of infected endometrium and the resulting hyperemia, due to the ligation of the uterine artery distal to the level of the internal os, which is clearly proven by the hemorrhages during the menstrual periods in sev-

eral of my cases; as against the sudden menopause, with its very evident and sometimes disastrous results on the nervous system of a total hysterectomy.

3. Ovarian tissue it is conclusively proven, must remain to preserve the influence of the harmony of the ovarian secretion with the internal secretion of the several ductless glands and to stimulate the reflex nerve activity in the cells of the endometrium of the uterine stump. In considering the necessity of saving ovarian tissue where the pathologic condition of the broad ligaments is such that it seems impossible to leave ovarian tissue, the idea suggested by Dr. Franklin Martin, to implant ovarian tissue, might be employed. In such instances autotransplantation

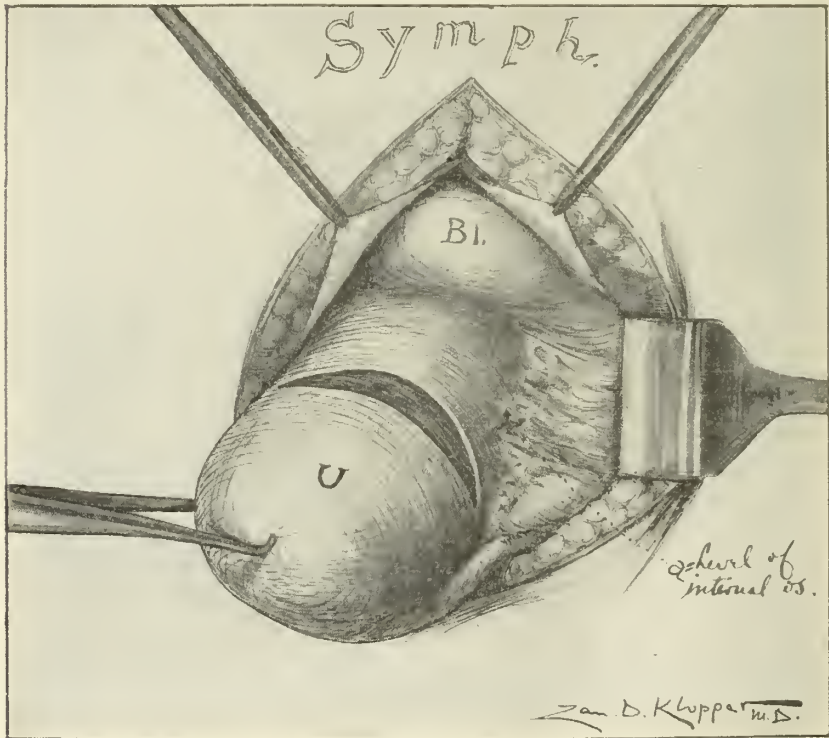


Figure 1.

of ovarian tissue into the stump of the uterus should be attempted, as the reports of Dr. Martin show that the success of his technic, when carefully followed, is quite certain to produce nourishment of the grafts.

4. To properly supply the preserved endometrium, the blood-vessels entering the uterus are necessary, and in consequence the plan to ligate the uterine artery on the body distal to the level of the internal os is included in the technic to be described.

In two of my cases, and in several in the literature, where menstruation is reported following hysterectomy, quite a severe hemorrhage has

occurred during the first few postoperative months, but in each case this gradually subsided with the subsequent periods.

5. The sympathetic nerve supply is of importance. This nerve supply is located in the broad ligament and sends only minute filaments into the tubes, uterus and ovaries, in a somewhat similar manner to the blood-vessels described by Byron Robinson, and thus, by following a plan which

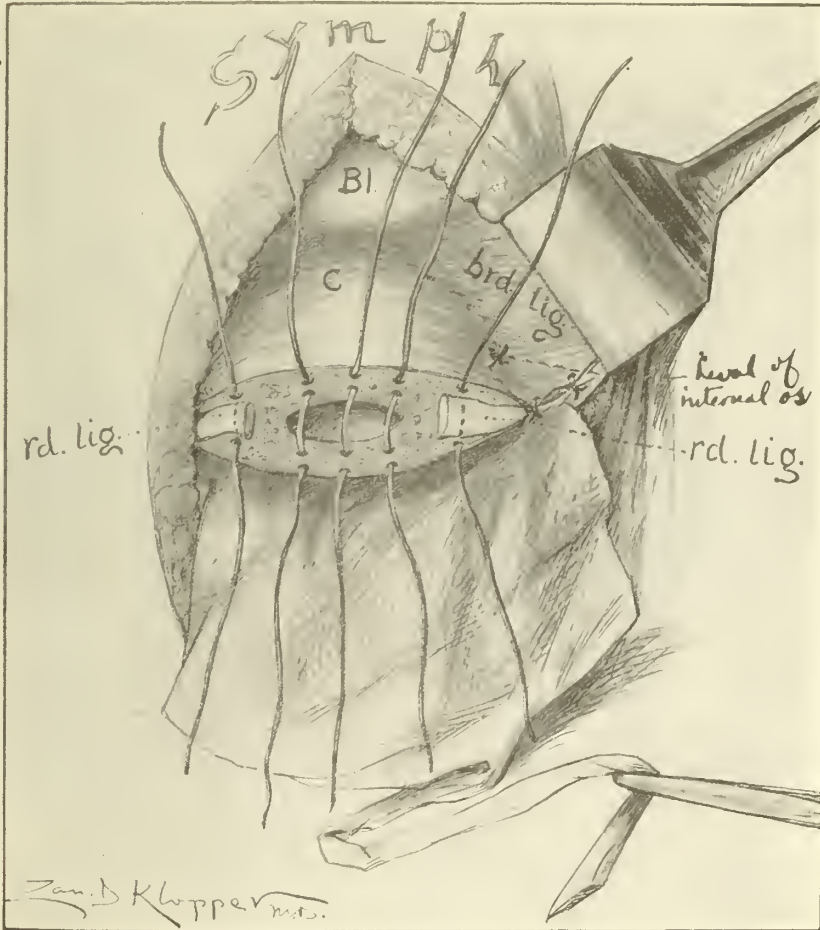


Figure 2.

does not disturb all of the plexuses and trunks of the ovarian and uterine sympathetics, the nerve action remains.

In separating the tube from its broad ligament attachment, if the ligating is done close to the tube, between it and the ovarian artery, none of the sympathetic nervous system located in the broad ligament is disturbed, except the filaments extending directly into the tube, and by continuing the ligating of the broad ligament in a like manner close to the

uterus, to the point selected for uterine amputation, the broad ligament sympathetics are granted continued immunity from destruction.

It is found that repairing the cervical and perineal tears will greatly aid the complete reeovery, and this should be done before opening the abdomen in all eases where the condition of the patient will permit.

Operation.—The various steps of the operation will easily be understood by following the illustrations.

The fundus of the uterus is controlled by taking two good bites with a non-cutting needle armed with No. 3 catgut, leaving the thread long and snapped with forceps.

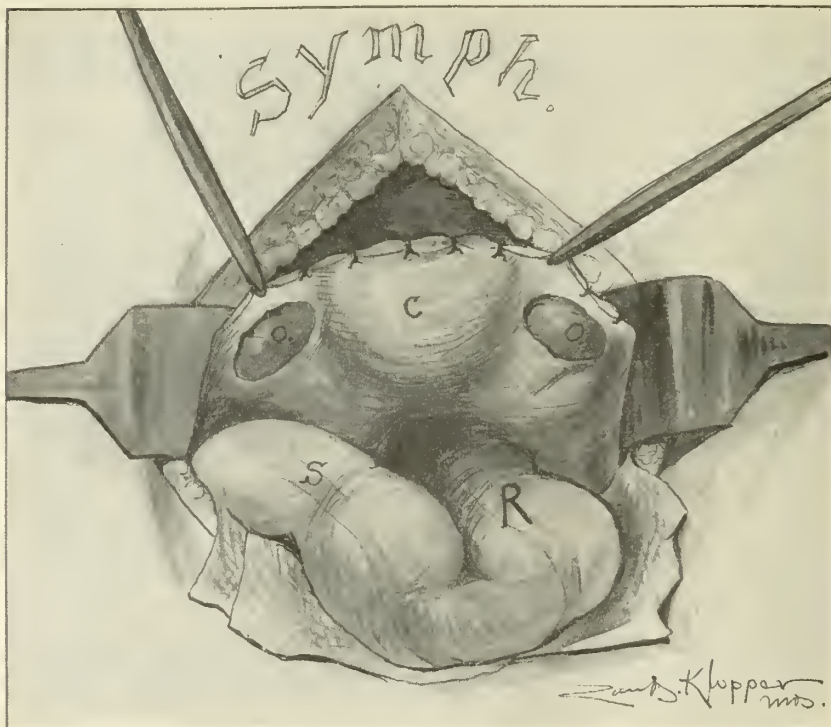


Figure 3.

On account of the location of the sigmoid, if the pathologic condition of the right ovary warrants, it is better to remove the ovary on the sigmoid side, especially if any extensive resection for cysts is thought necessary, because of the possible resulting pains due to adhesions between the raw surfaces of the resected ovary and a sigmoid whose endothelial cells may have been disturbed during operation. A safe rule to follow is to save the best ovary, but to favor that located on the right side.

Select the side where the ovary is to be preserved for beginning the broad ligament work, ligating or clamping this peritoneal tissue along and close to the tube, between it and the ovary, as far as the uterus. Swing

down along the uterus with this ligation, avoiding the utero-ovarian artery of Robinson, if possible, and ligating the branches by taking half-inch bites. Ligate the round ligament separately and then continue the ligating to the point for amputation, which is distal to the level of the internal os, on the body of the uterus. (The level of the internal os is marked (x) on the plates.)

The uterine artery at the amputation level is ligated independently by passing a round needle threaded with catgut (No. 2) from below upward around the uterine artery and fixing by including a bite in the muscular wall of the uterus to the approximal side of the level for amputation.

The opposite broad ligament is now controlled in a slightly different manner if the ovary on this side is to be removed. The ovarian artery is grasped in forceps at the fibrinated extremity of the tube. The broad ligament is clamped on the approximal side close to the ovary, directing the forceps to the amputation level. The round ligament is ligated separately as on the opposite side, and the uterus with its appendages is left attached only at the cervix. Amputate straight across the uterus, leaving peritoneum enough to cover the stump.

Several deep catgut (No. 2) sutures coapt the muscular wall of the uterus, that one at the cervical canal lembertizing the muscle and closing the canal.

Beginning on either side, the layers of the broad ligament are stitched with a continuous (No. 1) catgut suture.

In this suturing the round ligaments are secured and fastened into the stump on their respective sides.

This continuous suture is carried across the stump of the uterus out on the opposite broad ligament to the point where the peritoneum is undisturbed.

Resulting we have ovarian tissues remaining:

Uterine stump left large enough by amputation $1\frac{1}{2}$ cm. distal to the internal os, to leave functioning uterine endometrium.

Cut surfaces of the broad ligament peritoneum approximated.

Stump of the uterus swung up by amputated round ligament.

CASES WHERE THIS TECHNIC WAS EMPLOYED WITH THE EXPECTATION AND RESULT OF PRESERVING MENSTRUATION

CASE 1.—1909: Mrs. B., aged 39 years; one child. Had a perineal laceration of the second degree; cervix large, eroded; some leukorrhea; uterus large and soft. Supravaginal hysterectomy; perineal and cervical laceration not repaired.

Result: menstruated six weeks after operation, and has continued to menstruate regularly ever since. Patient still complains of much backache and has consented to have perineum and cervix repaired. The menses are beginning to become less in amount, but this causes the patient no concern. She has not had any of the evidences of menopause until quite recently, when she has begun to notice "hot flashes;" however, since she is now 41 years old, her present age may be the cause.

CASE 2.—1909: Miss D., aged 25 years. Had profuse hemorrhages for two years. During last year these have occurred about every three weeks, lasting six or seven days. Abdominal examination revealed several sub-peritoneal fibroids. Supravaginal hysterectomy performed. Subsequent menstrual history was uneventful, as she has menstruated regularly since operation, in fact, she men-

struated immediately thereafter and has never missed since. At present there is nothing to indicate that the menopause is approaching.

CASE 3.—1910: Mrs. H., aged 32 years; two children. Has subinvolved uterus, cervix and perineum lacerated, endometritis with much discharge; usual symptoms following weight in the pelvis. Tears of cervix and perineum repaired before abdomen was opened. Supravaginal hysterectomy. Menstrual history subsequent to operation quite satisfactory, as menses began during the second month and have continued to appear regularly. The menstrual flow is not so profuse and its duration is shorter than before.

CASE 4.—1910: Mrs. R., aged 30 years; three children. Has an infected right tube, uterine discharge and enlarged subinvolved uterus. Supravaginal hysterectomy. Subsequent menstrual history began first month. It failed to appear every other month for four months but has been regular though not as profuse ever since. Leukorrhea in this case ceased until third month but later reappeared and lasted up to about six months ago, when it ceased entirely.

CASE 5.—1910: Mrs. H., aged 28 years. In 1908 this case had been operated upon for removal of right tube and ovary. The uterus was suspended by ventral fixation. This resulted in two long firm bands of adhesions from the uterus to the anterior abdominal wall, giving the uterus no support. Supravaginal hysterectomy. Menses began at the second month and have continued uneventfully.

CASE 6.—1910; Mrs. E., aged 28 years, one child. Has a large soft uterus, with much discharge. Supravaginal hysterectomy. Menses began first month and continue at the present time.

CASE 7.—1909: Mrs. A., aged 34 years; one child. Fibroid. Supravaginal hysterectomy. Menses began during third month and patient is still menstruating regularly every month.

CASE 8.—1910: Mrs. G., aged 33 years. Has a pus tube with uterus in a mass of adhesions; very profuse discharge. Supravaginal hysterectomy. Menses began during second month and were hemorrhages for three months. Patient still menstruating every month.

CASE 9.—1910: Mrs. C., aged 30 years. Uterus large, soft and discharging; perineum and cervix lacerated. These tears were not repaired at time of operation but one year later. Supravaginal hysterectomy. Menses began first month and have been regular ever since.

CASE 10.—1910: Mrs. M., aged 29 years; no children. Multiple fibroids. Supravaginal hysterectomy. Menses began second month and have continued regularly.

CASE 11.—1909: Mrs. H., aged 27 years. Both tubes removed one year previously. Large ovarian cyst with adhesions. Supravaginal hysterectomy. Menses began first month and have since been regular though it seemed at the time of operation that the ovarian tissue left was hardly adequate.

CASE 12.—1910: Mrs. K., aged 31 years; one child. Adhesions; enlarged uterus; discharge. Supravaginal hysterectomy. Menses appeared first month and was very profuse for four months but four months later was scanty and lasted only one day. At present the menses are of this character.

CASE 13.—1910: Mrs. K., aged 30 years; one child. Infected subinvolved uterus. Supravaginal hysterectomy. Menses appeared second month; regular when last seen.

CASE 14.—1911: Mrs. M., aged 28 years; no children. Fibroid. Supravaginal hysterectomy. Menses appeared third month and still continue regularly.

CASE 15.—1911: Mrs. P., aged 34 years; three children. Uterus bound down posteriorly; much discharge; much pain; both ovaries cystic. Supravaginal hysterectomy. Ovaries resected; menses began first month and still continue regularly.

CASES 16 and 17.—Done in last few months; have both menstruated twice since operation.

32 North State Street.

AMERICAN RAILWAY RELIEF FUNDS *

W. H. ALLPORT, M.D.

CHICAGO

I. HOSPITAL DEPARTMENTS NOT USING THE RELEASE CONTRACT

I

The purpose of the present article is to discuss some of the social and economic aspects of the hospital and relief departments organized by American railroads for the care of sick and injured employees.

Railroads operating in the United States may with reference to the character of their relief organizations be divided into three groups. The railroads of the first group have organized no relief departments or funds for the benefit of their employees. They employ surgeons and hospitals and treat their men for occupational injuries, paying all bills for such treatment without seeking reimbursement from the men. The roads of the second group have introduced mutual relief department funds, but do not require their men, in consideration of special relief provided, to sign contracts releasing the company from further liability for damages. The third group comprises railroads which have added to the original and limited scope of the relief department a comprehensive scheme of indemnity for all forms of disability, based largely on a formal contract between employer and employee releasing the former from claims for damage through injury inflicted on the latter while at work. Technical legal phases at once develop in connection with this "release contract," and it appears best on that account to refer only incidentally at this time to these more complex organizations, reserving their more thorough consideration for a separate paper.

Group 1: Chicago & Northwestern; Great Northern; Louisville & Nashville; New York Central; Michigan Central; Lake Shore & Michigan Southern; Lake Erie & Western; Chicago, Cleveland, Cincinnati & St. Louis; Boston & Maine; Seaboard Air Line; Chicago & Alton; Nickel Plate; Delaware, Lackawanna & Western; Central R. R. of Georgia; Minneapolis, St. Paul & Sault Ste. Marie (Canadian Pacific); Chicago, Milwaukee & St. Paul (eastern lines); Chicago Great Western; Monon Route (Chicago, Indianapolis & Louisville); Grand Trunk; Maine Central; New York, New Haven & Hartford; Southern Railway; Erie—23 roads. Until June 1, 1911, the Illinois Central and Yazoo & Mississippi Valley railroads were among this number, but on that date these two roads followed the lead of the other Harriman lines and established the Illinois Central Hospital Department. For an account of the method formerly followed by the Illinois Central and Yazoo & Mississippi Valley railroads, see *Journal of the American Medical Association*, November 12, 1910.

Group 2: Northern Pacific; Southern Pacific; Union Pacific; Wabash; Illinois Central and Yazoo & Mississippi Valley; Missouri Pacific and St. Louis, Iron Mountain & Southern; Atchison, Topeka & Santa Fe; Chicago, Milwaukee & St. Paul (western lines); Chesapeake & Ohio; Denver & Rio Grande; Frisco System; Chicago & Eastern Illinois;—14 roads.

Group 3: Baltimore & Ohio; Pennsylvania Lines; Chicago, Burlington & Quincy; Philadelphia & Reading; Atlantic Coast Lines (Plant System); Lehigh Valley—6 roads.

* By courtesy of the *Journal of Political Economy*, January, 1912.

The writer does not claim that these lists are complete, merely that they are representative.

II

Many American railroads have organized their surgical service into hospital and relief departments, and have added to the duties of that service the care of employees who are sick or disabled from causes not incidental to duty. The data from which this article has been constructed were derived from a study of the relief systems of the following railroads:

Northern Pacific R. R. Co.—The Northern Pacific Beneficial Association, organized in 1882; membership voluntary;¹ is not incorporated, but operates under a constitution and by-laws. Managed by a board of managers: ten elected by men and nine appointed by the general manager.

Southern Pacific R. R. Co.—Hospital Department; membership obligatory; not incorporated; no board of managers. A trust fund managed by the company. Men have no voice in management.

Union Pacific R. R. Co.—Union Pacific Hospital Fund, established 1905; not incorporated; no board of managers. Fund managed by the company. Membership obligatory. Men have no voice.

Wabash R. R. Co.—The Wabash Employees Hospital Association: organized June 1, 1884. No charter or incorporation. Board of trustees designated by company. Membership "voluntary."

Illinois Central R. R. Co.; Yazoo & Mississippi Valley R. R. Co.—Hospital Department, established 1911; not incorporated: membership "voluntary." Fund managed by the company. No board: men have no voice in management. A separate organization from the following:

Illinois Central R. R. Co.—Illinois Central Railroad Hospital Association, incorporated, operating over the Louisville, Nashville and Tennessee divisions of the Illinois Central R. R.; originally incorporated under the laws of Kentucky as the Chesapeake & Ohio Southwestern Association, but the name was changed when the Illinois Central Railroad purchased the Chesapeake & Ohio Southwestern Railroad. Management is vested in a board of thirteen directors of whom eight are permanent and are officers or department heads, and five are elected by the eight "to represent as nearly as possible the employees." The chief surgeon of the Illinois Central Railroad is not an officer or member of the association, but he appoints and fixes the salaries of all the surgeons and assistant surgeons, except the assistant chief surgeon, who is a permanent officer and member of the board of directors.

Atchison, Topeka & Santa Fe R. R. Co.—Atchison, Topeka & Santa Fe Hospital Association, incorporated 1891. Board of trustees either officers of the company or appointed by the president of the company. Officers elected by trustees. Men have no voice in the board. Membership obligatory.

1. So says the secretary of the association in response to a letter of inquiry; but the Northern Pacific Beneficial Association by-laws (Art. 1) say: "All persons who accept service in the employ of the Northern Pacific Railroad or the Northern Pacific Beneficial Association shall from that date be considered members."

Missouri Pacific R. R. Co.; St. Louis, Iron Mountain & Southern R. R. Co.—Missouri Pacific-Iron Mountain Railway Hospital Department, incorporated 1891. Board of trustees either officers of the company or appointed by the president of the company. Officers elected by trustees. Men have no voice in the board. Membership obligatory.

St. Louis & San Francisco R. R. (Frisco System).—Employees' Hospital Association of the Frisco Line, chartered 1898. Membership obligatory. Five trustees: general manager, general solicitor, superintendent of transportation, and two others appointed by the general manager. The company contributes \$500 per year as its assessment.

Chicago, Milwaukee & St. Paul R. R.—Milwaukee Hospital Association, not incorporated, established 1908, only for lines in South Dakota, Idaho, Washington and Montana. Membership obligatory. No board, and men have no voice. Association organized by and under control of the chief surgeon of the Chicago, Milwaukee & St. Paul Railroad Company. The company is said to contribute about 10 per cent. toward the expense of administration.

Chesapeake & Ohio R. R. Co.—Chesapeake & Ohio Hospital Association, not incorporated, established 1897. Operated by a board of governors, six of whom are officers of the company or department heads, and seven elected by the men. The company owns the two hospitals and pays half the chief surgeon's salary. Membership is obligatory.

Denver & Rio Grande R. R. Co.—Denver and Rio Grande Railroad Company's Relief Association, incorporated 1888. Membership involuntary. Eleven trustees: five appointed by the general manager, six elected by men. Executive committee of five. The chief surgeon of the road is chief surgeon and manager of the association. No annual statement published.

The insurance plan of the Chicago & Eastern Illinois R. R. can hardly be classified under Groups 2 or 3, and is therefore considered separately as follows:

Chicago & Eastern Illinois R.R. (Frisco System).—Although not maintaining any hospital and relief department this short line of less than 1,000 miles has had in successful operation since 1893 an organized plan of compulsory insurance protecting the employees of its operating departments against privation through service accidents, sunstroke, burns, and freezing. *There is no release contract and any employee may use his insurance money to sue the road.* The company issues a policy, pays the expenses of management, guarantees the fund, and furnishes and pays its own surgical staff. The fund is kept up by assessments, and a deficit, which occurs annually, is met by the company. The fund is expended for benefits and hospital expenses and burial expenses up to \$100. The benefits are one-half the monthly pay, as scheduled in the insurance application, and are continued for 50 weeks. Death benefits are half the scheduled wage for one year, less amounts already paid, but benefits must not aggregate more than \$1,000.

Engineers, firemen and shopmen are assessed 1 per cent. (this rate is too low for shopmen); passenger conductors and brakemen, $\frac{1}{2}$ per cent.; freight conductors, brakemen and switchmen, 2 per cent. A brief statement of operations follows:

Collected from men, 1902-3.....	\$22,254.13
Benefits paid to men, 1902-3.....	26,525.43
Deficit made up by company.....	4,271.30
Collected, 1903-4.....	28,889.03
Benefits paid, 1903-4.....	33,480.78
Deficit made up by company.....	4,591.75
Collected, 1904-5.....	32,439.75
Benefits paid, 1904-5.....	36,533.07
Deficit by company, 1904-5.....	4,093.32
Deficit by company, 1905-6. (The company reduced the deficit by removing certain causes of accident.).....	1,569.74

It is hard to know just where to classify this unique system of protection. Of course it saves largely for the company in half-pay and donations for injuries for which it is plainly not liable; but the company contributes a very respectable sum to manage and balance the fund, pays all doctors' bills and exacts no anticipatory release for injuries for which it may be liable. Hence the fund promotes considerable good feeling and acts as a strong deterrent against litigation. On the other hand, the men are not dependent on the company for any charity during disability. The system differs from all the other systems in Groups 2 and 3 in the following points, each constituting a distinct advance over the more conventional method:

1. Although the fund is obligatory and managed entirely by the company, it cares only for occupational injuries and does not intrude itself selfishly into the field of sickness maintenance as do the companies of Groups 2 and 3—it escapes the charge of paternalism.

2. The company exercises an unusual forbearance in refusing to exact a release contract. It furnishes as much legitimate assistance without the release as the companies in Group 3 furnish with it.

3. The company does not saddle the fund with the maintenance of the surgical department, as is the case with the Harriman lines and others in Group 2.

4. There is no building up of a large surplus as a fund to replace the company's guaranty. On the contrary, the assessments are so low that the company is forced, in addition to paying management and surgical expenses either to make up an annual deficit or to reduce the causes of accident. Both of these alternatives result advantageously to the men, and are no more than really should be expected of any company.

Accepting current ethical standards for the purpose of practical criticism, it would be hard to say where this admirable method of meeting the immediate needs of the injured workmen could be improved on—the method is compulsory, gives him surgical attendance and maintenance for self and family without taxing his self-respect, and leaves the way open for redress through the courts if his injury occurs through other negligence than his own.

These departments are "of the nature of cooperative benefit and relief associations supported by trust funds raised by monthly contributions." They are practically non-existent except as departments of the companies which call them into existence. This is especially true where the departments are not incorporated, in which case the association is legally non-existent, and suits for damages on account of malpractice, etc., must be brought either against individual employees or against the company. Even where the association is incorporated, the courts of the Middle West have held, in spite of strong contention of the railroads to the contrary, that the department is merely the creature and agent of the parent corporation, and that the latter is still liable unless a tangible and independently separate existence can be shown, which is rarely the case. Thus in *I. C. R. R. v. Buchanan*, 88 S. W. Rep. 312, and *Ky. Court of Appeals*, 103 S. W. Rep. 272, the court held that the association was merely the agent of the company. In another case (*Phillips v. St. L. & S. F. R. R.*)

111 S. W. Rep. 109, Mo. Supreme Court) the court held also that negligence of the agent was negligence of the company, and that the association and the railroad were liable coequally. A case involving somewhat similar principles is *Zumwalt v. Texas Central R. R.*, 121 S. W. Rep. 1133, argued before the Texas Court of Civil Appeals. The singular contention was made in this case that the association was organized by the company as an act of charity in which it had no pecuniary or, in fact, any other interest beyond the welfare of the men.²

Although the employee contributes to the fund he has little voice in its management and none in selecting its surgeons, and no vested rights in it or in its property or surplus; nor is he responsible for its deficits, if any. His rights cease when he has received his benefits or terminated his service with "the company." The company, therefore, in consideration of its own exclusive title to these vested rights, which have often been bought and sold together with the parent company,³ "becomes the insurer of the employee within certain prescribed limits."

These departments are always eventually self-sustaining organizations, complete within themselves, under the control of a chief surgeon, who is appointed by and reports to either the vice-president or general manager of the road, or to a board of managers, in which latter case the employees usually receive representation.⁴

With other departments of the road the relief department stands on a nominally equal footing. The relief department makes its own appointments of subordinates, draws its own vouchers against the trust funds in the hands of the company's treasurer, and makes its own rules and regulations subject to the approval of the general manager. It cares for sick and injured employees, injured passengers, and trespassers—the latter at the company's expense; prepares reports for its own use and for that of the company's claim and legal departments; and confers with and advises these departments. Its employees, when called into court, testify as original witnesses in behalf of the company. In matters purely surgical and medical it serves the employee; in matters legal it serves the company and its claim and legal departments. It safeguards the sanitary

2. "The contention is made by the railroad that its hospital department is a charity which the company maintains to care for its injured, and that beyond the exercise of due care in the employment of a prudent and careful physician the company cannot be made liable for his negligence. This in spite of the fact that the company deducts a certain sum from the employees' wages for hospital purposes and gives the employees no control over the fund and no voice in the employment of physicians or hospital attendants." The court made these very just observations: "The mere fact of the lack of a distinct pecuniary profit through the hospital is not conclusive that the hospital did not contribute to the profit of the company, since as an incident to the company's principal business it might be productive of great profit through its instrumentality both in reducing loss and expense by maintaining the capability of its employees and in reducing the number of injured, as well as in caring for them most economically after accidents. One could hardly think an instrumentality which tended to reduce the loss and wear and tear of rolling stock could be unproductive of profit. If the company undertook, for any consideration or assessment, to care for the eyes of injured employees by the employment of medical agents in whose selection the employee had no voice, the employee was certainly entitled (for his consideration) to a high grade of skilful treatment, and in the absence of such was entitled to hold the individual to whom he had paid his money responsible, whether that individual's profit from the transaction was to reach him through direct or indirect means."

3. *Chesapeake and Ohio Southwestern R. R. to Illinois Central R. R.*

4. *Chesapeake and Ohio Southwestern R. R., Illinois Central R. R. (M. and L. divisions), Northern Pacific R. R. and Denver and Rio Grande R. R.*

interests of the company, vaccinates employees, assists at quarantine, and examines applicants for employment either at their own expense or, if rejected, at the expense of the company. The company maintains no surgical staff outside of the hospital department.

On some roads membership in the department is nominally optional; on others it is frankly obligatory; but the evidence goes to show that on roads where membership is nominally elective very few men employed in actual operating service remain in it, or are favorably considered by the heads of that service, unless they contribute to the relief department. Where the system is once in operation, men seldom enter the operating departments who do not join "the Relief." Injured employees who have not so contributed are, where the injuries are acute, still treated by the department as though contributing, and the cost of such treatment is not unusually borne by the fund, rather than by either the company or the individual.

The fund is maintained by assessments levied via the pay-roll, and is held by the company's treasurer to cover vouchers issued by the chief surgeon and approved by the company's general manager and auditor, or by the department's board of managers. Vouchers are for salaries; drug, supply and hospital bills; taxes on plant; repairs; rent; insurance; new plants; accounts of physicians and surgeons; burial expenses: stationery and postage. The company furnishes telegraph and telephone service on its own lines, office rent in its own buildings, transport over its own lines, and the services of its own accounting officers and treasurer. The board of managers serves without salary. If there is a deficit, as is rarely the case, the company makes it up, but reserves the right to increase the assessment or to reimburse itself from future assessments.⁵ With a very few notable exceptions,⁶ unless there is a deficit, no cash reaches the fund from the company. In some instances the company has advanced money for hospitals, plant, and equipment, but after a few years of operation the department has accumulated sufficient surplus to reimburse the company in full.⁷ In other cases the company loans some sort of plant left over from its original surgical department, or designates certain buildings for hospital use without donating them outright.

The assessment is a fixed sum each month. On the Harriman lines (Southern Pacific R. R., Union Pacific R. R., Illinois Central and Yazoo & Mississippi Valley Railroads) all men alike, irrespective of salary, are assessed 50 cents per month. On other roads assessment is graduated according to salary and may range from 25 cents to \$2.⁸ Inasmuch as the benefits are the same for all employees it would seem that the former method is the more just.

On roads where a high maximum assessment (\$1 to \$2) is levied, an embarrassing surplus is apt to develop. For example, in 1910, the North-

5. This was recently the case on the Chesapeake and Ohio R. R.

6. Northern Pacific R. R., Chesapeake and Ohio R. R., Frisco Systems.

7. Illinois Central R. R., Padueah Hospital (Chesapeake and Ohio Southwestern R. R. originally).

8. On the Chesapeake and Ohio R. R. until 1909 the assessments for some classes were as low as 10 cents, but a deficit occurred and the minimum was raised to 25 cents.

ern Pacific Beneficial Association, in addition to two hospitals originally worth \$60,000, owned by the Northern Pacific R. R., and improved and equipped by the association at a cost of over \$80,000 more, showed a third plant worth \$119,000, an invested surplus of \$197,281, and \$85,000 in unexpended cash; total \$541,281, no part of which will of course ever find its way back either directly or indirectly to its original sources.

Where the department is incorporated or has taken the usual steps to insure a legally autonomous existence, it holds property, governs itself through a board which is at least nominally independent, and is sometimes sued for bills or damages like any other corporation or copartnership; but the highest courts have also held that, even where the department exists as a corporation, the vested property rights of the railroad company in the assets of the department, as well as its legal and business interests, are so wrapped up in the identity and government of its offspring, that the company when sued for the acts and obligations of the department can hardly shelter itself behind a plea of separate existence or lack of responsibility. The association is the agent of the company and the latter is liable for the acts of the former. The Kentucky Court of Appeals, after a careful combing of the structure, methods and internal economy of one of these organizations, comes to the conclusion that "the railroad company is the real yolk in the association egg."⁹

In return for his assessment the employee receives medical, surgical, and hospital care for all legitimate diseases and injuries, on presenting an order on the association from his employer. Such care, however, must be accepted from certain designated physicians and hospitals. Unlike similar associations organized by mining and milling corporations like the Colorado Fuel and Iron Co., these railroad departments care only for the men and never for their families. No cash, time, death, or other allowances are made; and where the disabled employee employs an outside doctor, or goes to a hospital other than one designated by the department, he must pay all expenses. He is given care at the company's dispensary and receives his medicines without cost to himself beyond his assessment. He is furnished certain appliances without cost, and a moderate cash burial allowance is provided in case he dies. The maximum of treatment and hospital care allowed is usually six months for medical and twelve months for surgical cases. Care at home or at the office of a local surgeon is also furnished in certain cases. Local surgeons work under a fee-bill contract of very moderate proportions, for surgical cases, and on some roads receive a pass over the company's lines in lieu of compensation for medical and sanitary work. Other roads pay for medical calls and consultations at about half local rates. The department is apt to exclude contagious, infectious, and chronic diseases from the scope of its work, and always excludes venereal diseases and the results of alcoholism and improper conduct. All cases must be carefully reported on blanks provided for the purpose, and in surgical cases duplicate reports immediately reach the files of the claim department.

9. *Illinois Central R. R. v. Buchanan*, 103 S. W. Rep., 272.

The personnel and organization of these departments are familiar enough, but certain intimate details are worth attention. A chief surgeon manages all surgical, medical, and sanitary affairs in the interests of the company. He reports to and is appointed by the managing officer of the company; his salary is paid by the employees through the fund.¹⁰ He appoints district and local surgeons and pays them by vouchers drawn against the fund. He should have, therefore, a large personal influence and following among the line surgeons. His appointments, when his judgment is good, are usually from the best available local talent; but where his opinion or wishes conflict with those of the general manager or of the claim or legal department, he usually finds it expedient or actually obligatory to yield. Not infrequently such forced appointments cannot be justified on professional grounds. His office is close to that of the chief claim agent and general attorney, and he acts as their private surgical informant and adviser in all cases where litigation exists or is impending. Although many of these cases develop through injuries to passengers and trespassers, and can give rise to no very strenuous question as to the ethical right of the surgeon to range himself on the side of the company, a large majority occur through injuries to employees, and must inevitably stir up in his conscience secret misgivings as to the correct ethical course to pursue toward the company which hires him and the injured servants from whose assessments his salary is derived.

Where damage cases have been brought by members of the association against the company the writer is not aware that the chief surgeon of the association or any member of his staff has ever been known to testify as a voluntary plaintiff's witness against the company. Such situations are and should be embarrassing to any high-minded surgeon. As a matter of obvious equity and decency, surgeons employed by relief associations supported by mutual contributions of employer and employed, and with inseparable obligations toward both parties, should be excluded from all participation in legal proceedings except as they are subpoenaed to testify as to facts. Such is usually not the case, however; the fact that such and such a surgeon has a reputation as a "strong witness for the company" is also a strong card in his favor when he seeks employment; and during lawsuits on trial he frequently sits next to and assists the company's attorney. It must be conceded, however, that his voice is frequently raised, in those confidential relations which he sustains toward the company, in favor of large settlements with employees who he knows have been seriously injured. Not so creditably, he has been known to give outrageously biased testimony on the witness stand, as well as to take advantage of confidential relations established with injured employees to lead them to settlements not at all commensurate with their injuries.

A case recently tried in the Arkansas courts throws a curious light on certain tortuous aspects of these relations. A switchman sustained an injury to the arm and received treatment from the chief surgeon. In

10. The Chesapeake & Ohio R. R. pays half this salary; on other roads the company usually pays nothing.

course of time he was discharged with an assurance, in the presence of witnesses, that he had recovered, and was sent by the chief surgeon with a sealed letter to the chief claim agent. On the basis of the assurance a small settlement was made. Subsequent failure to achieve a complete recovery led to an examination by an outside surgeon, and to the discovery that the arm was permanently disabled in a way which must have been obvious to the company's surgeon. The testimony developed in the subsequent suit showed also that the letter contained a correct statement of the permanent disability, and the court therefore set aside the settlement on the ground that it had been secured through fraud and collusion. The Arkansas Supreme Court upheld the verdict given in the lower court and added a caustic opinion on the ethical standard set by the department chiefs.¹¹

Serving with the chief surgeon and of equal or actually superior authority is usually a secretary-superintendent. This official reports nominally to the board of managers, or to the chief surgeon, or to both; but he is most frequently appointed by, and in confidential relations with, the general manager of the road, and in all other relations does as he chooses. The secretary is not infrequently a former claim agent, and is apt to be the most interesting and picturesque, as well as the most influential member of the staff. He is often too old to be offered without effrontery to any other department, but he is a good mixer, and has had a chequered career of railroad experiences; although not always of a kind that would appear well in print. He is often better posted on practical surgical diagnosis and prognosis than the chief surgeon, and has a supreme contempt for doctors and their bills. He is an infallible prophet of good or bad luck to the legal department. He can wheedle out of a quarrelsome switchman a settlement which the claim department has abandoned as impossible. He is the guide, philosopher and friend of all widows and orphans, has been known to settle strikes and to lead railroad men's Y. M. C. A. meetings, and can secure the discharge of any man in the department from the chief surgeon down. The latter dignified official hates him, fears him, and in private incontinently bows down to him. The secretary-superintendent believes in himself alone, and talks freely to cover up his thoughts. With him, the men have an abiding faith both in the benevolent intentions of the company and in the

11. 113 S. W. Rep., 103, *St. Louis, Iron Mountain & Southern R. R. Co. v. Hambright*, Supreme Court of Arkansas. On the strength of the chief surgeon's statement Hambright accepted \$1,250 and released the company. On the plea of fraud and collusion between the chief surgeon and the claim agent, Hambright afterward sued to set aside the settlement, and recovered \$5,000. In upholding the verdict of the lower court Judge Hill said: "Dr. O—— says that his examinations were made in behalf of the employees as well as of the railroad; that his employment came from the railroad and his compensation from a fund derived from the assessments of employees. Certainly under such conditions Hambright had a right to rely on the doctor's good faith, and it does not lie in the mouth of the railroad to say that an employee cannot safely rely upon statements of a chief surgeon who occupies such a delicate position between it and its employees."

This is not the first time the railroad system just mentioned has been in trouble over collusion between the claim department and the hospital association. An exactly similar case involves a branch of the same system, the same claim department and the same hospital department's officials. *T. & P. R. R. Co. v. Jowers*, Texas Court of Civil Appeals, 110 S. W. Rep., 946.

Above references are from the *Bulletin* of the Bureau of Labor, 18, 1909, S0-82, p. 420.

notion that the company meets their contributions dollar for dollar. Without him the department would fall to pieces—unless another equally competent and sufficiently seasoned disciple of Machiavelli could be discovered.

The department is usually provided with one or more hospitals, and the hospital is exactly what the chief surgeon makes it. If the chief is a young, ambitious and well-posted man, and if the hospital is new, or if there is money enough to reequip it according to the modern ideas of the new incumbent, there is no reason why it should not—as it sometimes does—provide service equal to that of the best up-to-date hospitals, even though its location may be in a small town or in a western wilderness. The funds at the disposal of most associations are ample to provide the best nursing by a well-taught training school, good diet and medicines, comfortable wards and beds, single rooms for very sick patients or for those who care to pay for privacy, aseptic operating-rooms and materials, with the service of intelligent house surgeons changed often enough to prevent them from becoming stale. Often the hospital boasts of a bath, massage, and electrical department, with an *x-ray* machine operated by a competent radiographer. To such well-equipped hospitals, presided over by chief surgeons of high attainments and winning personality, the employees and even the general officers of the road will often go willingly for treatment, confident that no better can be had anywhere for any money.

And yet the railroad association hospitals are few enough throughout the country that come up to this type, or that could even stand a comparison with the average sisters' or denominational hospital located in most of the medium-sized towns of the Middle West. Dry rot and incompetence creep into and find shelter most quickly and permanently in this form of railroad relief department and its hospitals. Where the surgical department is not built up around a mutual fund, but draws its sustenance direct from the company, the front office usually feels the responsibility and insists on efficiency of service and plant, with an ear constantly open to unfavorable criticism. But with the responsibility shifted or divided by the organization of a fund or by frequent or too infrequent changes in the general management, watchfulness is apt to relax, and the standard of the department may reach a point so disgracefully low that the men shrink from accepting the services of the surgeons or the shelter of the hospitals. Such hospitals are often dirty, insanitary, hopelessly infected; their drug-rooms and druggists are unreliable; their operating-rooms are poorly stocked with rotting catgut, moldy gauze and rusty instruments; their attendants are insolent, their beds are infested with vermin; their house staff is lazy and the chief is a hopelessly superannuated drunkard who has long ceased to command enough public confidence to have any private practice. It is not difficult to place the responsibility for such a state of affairs. Although the men provide the fund and know when it is misspent, they have little or no voice in its management and any attempt on their part to urge an appointment or force a resignation is invariably frowned down. Of course, proximately the

mantle of authority rests on the chief surgeon and a mismanaged department is his fault. But when that official is superannuated, lazy, ignorant or otherwise incompetent, the blame for such a state of affairs if long continued rests with the general officer who controls his appointment and whose duty it should be summarily to remove him. And yet such a chief is often allowed to remain for years after no sane private individual would employ him, and after his professional inefficiency is notorious and a scandal among the men, because he is a good witness for the company, or happens to be on terms of friendship with the company's general officers, or because it is too much trouble to remove him. On the other hand, chief surgeons are sometimes changed arbitrarily with every change in the general management, or the position becomes the counter with which the legal department liquidates its personal or political debts—and the men pay the bill.

III

Let us now consider more closely the values offered by this system of relief and its significance to the employee and to the company, as well as its influence as one factor in our economic and industrial development.

It must, of course, be understood that in this article we are not dealing with the question of compensation, but merely with that of adequate provision for the treatment of occupational injuries.

1. What has the fund replaced for the employee; and what resources would still be his were the fund non-existent?

2. What does it replace for the employer; and is the company relieved of any generally recognized obligation through its existence?

3. What does each actually contribute?

4. What does each actually receive?

5. Which party is the gainer and which the loser by the transaction; and is it, with reference to the general welfare of society, a step forward?

1. The fund replaces for the employee (*a*) the old system by which he pays personally for the treatment of sickness or injury *not* incidental to his employment.

But against the old system as it still exists quite generally in this country¹² there is really little to urge. The following are stock arguments: the community may not be able to provide as good physicians as those selected by the fund, or may not have hospital facilities; the disabled man may be destitute or shiftless; organized relief is better and more dependable than that furnished by individuals; an insignificant tax on the entire body relieves individuals of a heavy burden; etc. These claims may all, at times, prove true enough, but they do not appear to the writer to carry any great force as against the arguments that under ordinary methods and conditions the man pays for his own troubles and for no one's else; forms no entangling alliances with interests disguised as philanthropy; is treated by the physician of his own choice, on whom he never calls unnecessarily; and is able under most of the conditions now prevailing to procure and pay for the services of physicians and

12. See *ante* (p. 1) for list of railroads not using the relief department. The list is by no means complete.

hospitals fully as good as any selected by and representing only his employer.

Furthermore, the American medical profession has constantly and wisely held out against systems of contract practice. The principle of collective bargaining which applies so well to wages and to cooperative stores has never worked well either for buyer or seller when applied to the commodity furnished by the medical man, who is at his best when his work is by the piece — and hand and head work at that. Such bargaining results eventually in debauching and cheapening the profession and in furnishing the patient with but poor and perfunctory service. Most of the better class of employees recognize this, and though paying their assessments without protest still employ their own medical man and pay for his medicine. These remarks apply especially to contract medical and dispensary practice, and to the work of men employed for routine services and paid by a pass or nominal salary. They do not apply to purely surgical services paid for on a reasonable fee bill, or to the salaried work of the surgical, sanitary and medicolegal advisers of the road — such work is for the road and not for the men, except incidentally, and represents but indirectly, if at all, their share in the benefits of the undertaking.

(b) The fund replaces the surgical relief which the company once furnished and paid for out of its own pocket. Few railroads have existed long without an organized staff of surgeons and hospitals either belonging to or subsidized by the company. For this surgical relief on many roads the man pays nothing, but accepts it as a matter of course, and as something to which he seems to be entitled by virtue of the extra hazard of his employment. For serious injuries the company pays all reasonable doctors' hospital, drug, nursing and burial bills, whether it likes to do so or not, and the average charge against the road's income is about \$10 per mile per annum. The justice of such a course, no one but a claim agent would now openly undertake to dispute, or to attribute any greater virtue to the company for maintaining a surgical department than for keeping up a repair department to make repairs on machinery. But for some curious and unfathomable reason many American corporations have silently but persistently refused to recognize the justice of this proposition. A large proportion of manufacturing concerns doing business in cities, where the injustice of failure to provide adequate surgical aid is lost sight of in the complex inhumanity of a million other more positive acts, refuse to give their employees more than first aid, and sometimes not even that. Railroad companies, however, are peculiarly situated and can ill afford to dispense with prompt and systematized surgical relief. Railroad injuries are often appalling, occur far from centers of population, and cannot wait for the unorganized efforts of individuals. Railroad men are organized and are in a position to demand efficient relief measures at somebody's expense; public sentiment is strong in American communities against railroads, and any lack of attention to injured employees would soon find effective condemnation from the jury box — hence the surgical department. And yet the notion of free sur-

gical relief for injured employees has long existed as a thorn in the side of railroad managements and claim departments, and any method by which the burden can be shifted is sure of favorable consideration, provided the shift is not too obvious, and provided conditions are ripe for putting it into operation — hence mutual relief and hospital funds; devices by which the company rids itself of its recognized surgical and sanitary obligations and functions, and by which the employee for a small assessment receives care for all legitimate disability.

These funds provide collectively for the men during sickness what they formerly purchased for themselves individually. By collective bargaining they procure drugs, doctors, nursing, hospital beds, etc., cheaper than by individual purchase, but probably the quality is not so good. There is nothing particularly new about this system of relief as practiced by unions and mutual associations of workingmen — England and the Continent have known it ever since the first days of the cooperative store. Any saving to the men by this bargaining, however, is lost to them by virtue of the fact that the employer has intruded himself into the bargain, insists that he shall handle the fund, and that his surgical bills, which he formerly had to pay himself, shall be charged against the fund to compensate him for his trouble as manager.

2. We thus see that the fund has replaced the company's own surgical department in so far as paying most of its bills is concerned, and that by so doing the employing company has adroitly shifted the burden of a generally recognized obligation toward the injured employee from its own shoulders to those of the entire servant body. The advantage is also with the company in that it is thus enabled to place a quasi-independent organization as a buffer between it and certain of its obligations.

3. (a) It is plain enough what the men contribute to the fund. They contribute 25 cents to \$2 per month, according to their wages, and according to the method adopted by each road in spreading the assessments.¹³ For a road employing 40,000 men and assessing them 50 cents per month the annual income of the relief department from assessments would be \$240,000. This amount should be ample to carry absolutely all the direct medical, surgical and sanitary expenses of the road, except such surgical charges as arise in connection with certain injured passengers and wayfarers who happen not to be treated by those salaried surgeons who are paid out of the fund. Such expenses must of course still be met by the company.

(b) But it is not so plain what the company contributes. Any investigator who has endeavored to secure in even approximate figures the amount and character of any company's addition to the fund will concede that there is something vague and illusory about it which is altogether unnecessary if it is at all adequate. Charters and by-laws make little mention of moneys or substantial contributions by the companies; and the annual reports, when issued, are curiously mystifying documents in all matters of finance.

13. For example: the Chesapeake & Ohio R. R. assessments were 10, 25, 35 and 50 cents per month until 1909, in which year the minimum assessment became 25 cents on account of deficits in previous years. For the year ending June 30, 1908, the total assessment was \$58,525; ending June 30, 1909, \$52,829; June 30, 1911, \$77,354.27.

"The company contributes transportation, telegraph and telephone service." If this means anything as a contribution to a mutual relief system it means that the company proposes to charge employees and their fund for use of these services in summoning assistance or in sending sick or injured employees to hospitals or doctors. How much is it customary for an employer to receive for such service? And how much would any court award him? Must the employee offset this sort of service against his own cash?

"The company guarantees the fund." What is the cash value of such a guaranty as an offset against cash assessments? And if the department — as the courts have often decided — is but a part of the company, with no real identity, what is the use of the guaranty, since the company is liable for the debts of the department, anyway? Granted that the guaranty does actually furnish some added protection, its cash value to the employee is altogether contingent on a possible deficit, and when it develops that the company reserves the right to increase assessments and to recoup itself for advances out of any future surplus, the cash value of the guaranty shrinks to the vanishing point.

"The company manages the fund." This phrase is comprehensive and generous, but what does it mean? Does it mean that the road and its officers merely advise and direct the policy of the department and serve as custodian, depository, directors or trustees without pay? Or does it mean that the road pays all the expenses incidental to the details of management, and thus makes an actual cash contribution?

If merely the former, such service can hardly be rated at a cash value to the fund, since not only are funds of this kind invariably handled by banks, trustees or committees acting without pay, but the influence wielded by the trustee may become an asset of such value to him or to his officer that the employer expressly stipulates that the trusteeship shall be held by one of his official representatives. Nor can the mere act of making monthly deductions from pay-rolls and holding them in the company's treasury be seriously regarded as any material offset against the real cash which is withheld.

If the latter is the case, then we have finally come on something which can be computed in dollars and cents, and which not only should but must be represented by some sort of exhibit in the annual report of the fund; if the fund, as is not usually the case, publishes a real balance sheet. Management, to have a cash value as an offset to assessments, should include general salaries, rent, taxes, insurance, clerk hire, office and traveling expenses, stationery, etc., thus leaving the fund resulting from the assessments to be expended in the actual care of the disabled employee. An examination of a large number of private and public reports of all kinds of railroad hospital associations and relief departments shows that the companies take various views as to the correct answer to this important question.

Certain companies make an exact statement of the cost of management, and meet the entire bill in cash. Thus, the Pennsylvania Lines

West of Pittsburgh¹⁴ (4,942 miles) paid out during the year ended June 30, 1909, "from their own treasuries, \$107,677.79 for expenses of Relief Department." This department, however, uses a release contract, and against that undoubted cash contribution the fund came to the relief of the company by paying out for accidental deaths and disablement \$154,380.50 — contributed by the men.

The Baltimore and Ohio Railroad, using a similar release contract, "contributes annually \$10,000 toward operating expenses." The actual operating expenses of the relief department for the year ending June 30, 1909, were \$108,951.54, and the accident benefits for that year were \$203,607.02. For \$10,000 the Baltimore and Ohio Railroad receives a release from surgical and compensation expenses amounting to \$312,558.56 — rather a good investment.

The Chicago, Burlington and Quincy Railroad Relief Department (Report, Dec. 31, 1908) paid out \$300,877.44 in 1908 for accident relief, and the road paid for operating the department \$78,063.79. Relief includes compensation based on a release contract.

The Philadelphia and Reading Railroad Relief Association (Twenty-First Annual Report, 1909, p. 7) shows \$311,340.38 in contributions by members; \$13,769.81 contributed by the railroad company, and \$16,998.46 by "associated companies" toward operations, a total of \$30,768.27. The release contract is the basis of relief. Accident benefits amounted to \$82,051.

On the four roads just mentioned the "contribution by the company" to the fund, and its appearance in the annual statement of the fund, is for the purpose of validating the release contract. The adequacy of the contribution and the legal aspects of the contract will be discussed in another paper.

When the association does not employ the release contract, fear of the courts no longer operates to force the companies to publish annual reports of these departments and to make at least a show of cash contributions to the funds. A few companies, however, do make a small cash contribution, without using the release contract system, and these companies usually make annual publication of the financial condition of the fund.

The Northern Pacific Beneficial Association (no release contract) statement for the year ending June 30, 1909, shows "deducted from pay-rolls, \$283.462." and total receipts \$304,578.73; total expenditures \$275,223.12. Surplus for year \$29,355.61. "Expenditures" include:

Hospital expenses	\$173,347.69
Line expenses	78,715.85
Burial expenses	19,672.90
General office, etc., expenses...	3,422.60
Stretcher equipment	64.08
	\$275,223.12

To the "total receipts" the company contributes annually "for services" \$6,000. The company "also provides the hospital buildings at Brainerd

14. *Twentieth Annual Report, Year Ended June 30, 1909*, p. 5. Similar showings occur in the annual report of the Pennsylvania lines east of Pittsburgh (6,293 miles).

and Missoula, makes the monthly deductions from the pay-rolls, and assists very greatly in making the successful operation of the department." If we allow \$6,000 per annum each as the rental of the two hospitals (on which the association makes all repairs, additions and improvements) we have a total annual contribution to the fund by the Northern Pacific Railroad of \$18,000, unless "assisting greatly at making the successful operation of the department" is a cash asset. Against this the men gave \$275,223.12 for their treatment for sickness and injury. We may estimate conservatively that 40 per cent. of this, or \$110,089, was expended for treatment of injury in the line of duty. For \$18,000 the company, therefore, received a value of \$110,089 from the association in the care of surgical conditions which, without the association, it would have had to meet itself. Again, this is not a bad investment.

The Chesapeake & Ohio Hospital Association report for the year ending June 30, 1911, shows:

INCOME	
Assessments	\$77,354.27
Interest	362.72
Pay patients	2,936.54
	<hr/>
	\$80,653.53
EXPENSES	
Salaries, hospitals, burials, etc..	71,356.29
	<hr/>
Surplus for year.....	\$ 9,297.24
Total surplus	14,855.57

The company furnishes, but retains title to, hospitals at Huntington and Clifton Forge, but the association equips and improves them. The company pays half (\$1,800) the chief surgeon's salary. Other salaries are paid by the hospital association, except that at important points a portion of the surgeons' salaries is paid by the company in consideration of the treatment of injured passengers, trespassers, etc. Local surgeons at small points are paid for services by "pass privileges" within their own state.

The Denver & Rio Grande Railroad Hospital Association publishes no report. This organization is almost identical in method with the last named, and uses hospitals already built by the company. Its constitution, like that of the Northern Pacific Beneficial Association, gives it the right to build and own other hospitals.

It is difficult to see what contribution, outside of the rent of hospital buildings and "pass privileges," the last two companies make toward the association.

The Frisco System donates annually to the hospital fund the munificent sum of \$500.

On the following roads the company makes no discoverable contribution to the fund:

Wabash Employees Hospital Association (report for year ending June 30, 1911) "erects and maintains hospitals for sick and injured." "Company donates telegraph and train service."

RECEIPTS	
Assessments, interest, etc. (nothing from company)....	\$81,929.12
EXPENDITURES	
Furniture, equipment, drugs, salaries, wages, supplies	
funerals, taxes, insurance, rent.....	97,271.04
Deficit for year.....	\$15,341.92
Surplus brought forward.....	46,335.14
Surplus June 31, 1911.....	\$30,993.22

There is no evidence, from an examination of annual reports and rules and regulations, that the Wabash Railroad Company has made any material contribution to this fund. The annual report does not separate the cost of caring for surgical and medical cases. All surgeons' salaries appear to be paid out of the fund, and there is no company's contribution "for management."

The Illinois Central Hospital Association (Louisville & Tennessee Divisions) publishes no annual statement. Its membership is 4,517 (1910); its income (approximately), \$42,000; its surplus (June 30, 1910), \$7,215. It is supported by assessments from all employees, from 40 cents to \$1 per month. The company furnishes the services of treasurer and auditor gratuitously. The hospital at Paducah was paid for and is maintained out of the fund. All salaries, except that of the chief surgeon of the Illinois Central Railroad, whose duties in connection with the association are purely diplomatic and advisory, are paid out of the fund. The company makes no monetary contribution. "An annual pass is furnished to surgeons in consideration of the agreement to treat, without fee, all sick employees in the surgeon's jurisdiction until such time as they can be sent to the hospital." The annual pass to surgeons seems to be the only contribution which the company makes to liquidate its obligation to an annual fund of approximately \$42,000 raised by employees to care for injuries and sickness.

The relief associations of the following roads are so similar that they may be considered together:

Southern Pacific R. R., Union Pacific R. R., Missouri Pacific R. R., Atchison, Topeka & Santa Fe R. R., Illinois Central R. R., Yazoo & Mississippi Valley R. R., Milwaukee Hospital Association (Chicago, Milwaukee & St. Paul lines west of Missouri River). These organizations are practically identical, and their control is vested entirely in the companies. Financially also there is little difference, and they have the following points in common: no annual reports, to public or members, of the condition of the fund; assessments compulsory, and usually 50 cents per man per month; all expenses, including salaries,¹⁵ hospitals, burials, drugs, taxes, surgeons' bills, etc., paid out of the fund; no visible or cash contributions by the companies beyond transportation and telegraph facilities, the services of the companies' officers, and the guaranty of deficits subject to reimbursement from future contributions; local surgeons at small points paid for occasional services by local passes issued by the companies.

15. One or two roads is said to pay a part of the salary of the chief surgeon. This statement is not confirmed.

From the foregoing rather lengthy but not unnecessary examination into the details of several relief funds we are now able to give intelligent answers to our third question—what amounts are contributed respectively by employers and employees to these railroad relief funds? (a) The men make contributions ample enough to manage and support the associations without help from the employer, and usually enough to lay by a small surplus. (b) Unless employers have naively concealed their contributions, with the simple-minded purpose of withholding from their left hand a knowledge of the good deeds performed by their right, they have contributed little beyond stage money to those funds not based on release contracts.¹⁶

4. What benefit does each actually receive from the hospital Association?

A. The employee receives all necessary care for legitimate medical and surgical disability. Where no release clause is operative his assessment is small, even insignificant; but the fund contributes nothing beyond hospital care to compensate for his lost wages, so that he is obliged to depend on outside insurance, savings, donations or indemnity to maintain him and his family during idleness. The fund is therefore in no sense complete in its relation toward the employee, and he must supplement it elsewhere. This deficiency is at once obvious to intelligent employees, and as a consequence the funds are never organized through their initiative, although an effort is frequently made to show that such is the case: "the railroad company is the real yolk in the association egg," and the employee well knows that without the association the company would still be obliged to supply him with surgical care. Many employees do not avail themselves of the advantages offered by the association, and their contributions, therefore, become involuntary donations to the fund.

B. What does the company receive?

These funds have invariably been organized by the companies, and sometimes over the protests of a large body of men. At the outset, membership has usually been voluntary, but as the older non-joining men have gradually sought other service the newer men have found it expedient, in fact if not in theory, to become members; so that by the time the organization is an integral part of the service the membership is complete for all men in the operating departments, and the company is relieved of the necessity of maintaining a double surgical system. It would be foolish to attribute these movements to any unselfish motives controlling a corporate employer. With the obvious pressure, not to say compulsion, which is brought to bear in their operating services by companies organizing associations, it must be equally obvious that some

16. Where annual statements show that the railroads have actually financed the management of the fund it has been for the purpose of legalizing the release contract. Compensation is provided for by large increases in the assessments. Where the cost of management is actually met by the employer the fund usually accumulates a bulky and unnecessary surplus invested in the company's securities. This surplus approximates and often exceeds the total of the employer's contributions and could be safely wiped out without loss to the men were the company's management and the release clause also to suffer elimination. There would not only remain to the men the benefits of adequate and safe insurance against all disability; they would also be left in possession of their right to recovery from an employer through whose negligence they might have sustained injury. Especially would this be the case if the fund were relieved of the charge of maintaining the company's surgical department.

advantage to the employer is sought which does not exist under the old system. These advantages are not difficult to discover, and may be enumerated as follows:

(a) Elimination of a long-standing sore spot from the company's expense account by payment out of the association fund of all bills for the care of injured employees. This, as has been shown, is accomplished at little cost to the company.

(b) A more perfectly organized surgical department; nominally autonomous, and serving thus as a buffer between the company and injured employees.

(c) A more perfect sanitary service, and more complete supervision over the general health and moral status of the company's servants.

(d) Use of department surgeons at a minimum cost to the company in the care of injured passengers, trespassers, etc.

(e) Trusteeship and control of a fund and property belonging to the men.

(f) Privilege of controlling appointments of physicians and surgeons favorable to the company; control of these by the claim and legal departments; unrestricted access of claim agents to injured men in the companies' hospitals and exclusion of persons unfriendly to the company; confidential relations between claim and surgical departments and exclusive use of reports prepared by the latter. These advantages are all material to the company and place the men at a corresponding disadvantage in dealing with the claim department.

The above considerations would show that the companies are, at the least, abundantly relieved of any imputation of altruism in advocating the cause of "mutual relief."

5. We are now prepared to consider, finally, which party is the gainer, and which surrenders the most by present methods of financing and handling these relief funds. There can be no question that, when well handled, the association fulfils a very useful function toward the average railroad man. If he is hurt he must have a surgeon and a hospital promptly, and it is out of the question to ask him in this emergency to act for himself. The same rule hardly applies to ordinary sickness; but there are extraordinary occasions when the lack of organized relief results in great danger and privation to the sick railroader, and when the man who usually ignores the fund and employs his own doctor is glad to accept the aid of the association physician and hospital. But such occasions arise in other employments, and are in fact daily occurrences on the three-fifths of American roads on which there is no sick relief; and no one comments on the fact that the situations must be, and are, handled through other channels. Nevertheless, it may be conceded that where the sick or injured employee applies to an association for medical or surgical treatment he is apt to be well and impartially cared for, and to feel that he is getting individually a large return for his assessment. Such grateful beneficiaries usually ignore the fact that the company's contribution is not conspicuous, and become for all time enthusiastic advocates of the merits of the fund, and credit the company for its beneficence.

But admitting the primary usefulness of the association it is fair to question: (a) whether it is properly financed; (b) whether the fact of its management as a company's department has not brought it to yield base and improper uses and advantages to the company not obvious in the constitution and by-laws; and (c) whether such funds are in line with the modern advance in the direction of a more equitable distribution of the accident load which has to be borne by commerce and industry.

(a) If we make the fundamental concession of all modern economists that a railroad or other large employer of labor should make the care of wounded employees a matter coequal with the repair of injured machinery, then each road using such a fund should contribute to it annually an amount equal to that necessary to establish and maintain a surgical department, including hospitals. This amount should be exclusive of passes, facilities and management, which are inevitable charges against the service, whether managed by the company or by an association. Under the simple form of surgical service provided by three-fifths of the companies, the cost is not less than \$10 per mile per year. Under the more widely reaching benefits to the companies secured through the association, and with a sinking fund charge to provide a share in the cost of constructing and maintaining hospitals, the contribution should be equivalent to at least \$15 per mile per annum. For roads with a mileage of, say, 6,500 miles, this charge would be \$80,000 to \$100,000. To this surgical fund from the employer should be added a somewhat larger amount for sickness, to be raised by assessment of employees. For a road of 6,500 miles, employing not far from 40,000 men, an assessment of 30 cents per month per man would produce an annual sickness fund of \$144,000. These two funds when united should be ample to finance the entire relief organization and to furnish a reasonable sinking fund. Should an unnecessary and unwieldy surplus develop, the proportionate contributions for ensuing years should be either cautiously reduced, or should be increased proportionately to provide for a complete scheme of indemnity and insurance.

It may be safely said that at the present time no American railroad which operates a relief association comes anywhere near to a realization of this ideal, and every one of the roads mentioned in this paper is at least 75 per cent. short in its legitimate contribution even to the surgical fund.

(b) Under the guise of management the associations and their funds and personnel are strained at every point to function for the companies. Membership in the associations is usually frankly, and always substantially obligatory for men in the dangerous services: were this not so each company would be forced to maintain a dual surgical service. Where management is with a board of trustees the company sees to it that it controls a safe majority: many funds are managed directly by the company and the men have no voice. All appointments of secretaries, superintendents, chiefs and surgeons are in the companies' hands through the general managers, and the men have no voice in appointing or removing. The companies use the salaried staff of the associations freely and gratu-

itously for inspection, sanitation, advice, testimony in court, and frequently for the treatment of injured passengers and trespassers without cost. The surgical staff reports promptly all cases to the companies' claim departments, and these reports are expected to contain not only surgical details, but also valuable information relative to the method of occurrence of accidents and the sources of responsibility. This same information is systematically withheld from claimant employees. In all matters where the injured employee and the company are in conflict the attitude of the association through its representatives, instead of being an impartial one, is invariably favorable to the interests of the company. When we make closer study of the informal, confidential and unrecorded operations of relief departments, in all matters relative to liability for negligence and compensation for injuries, the unclean trail of the companies' claim and legal departments is everywhere in evidence. The unfair advantage which the companies take of the men in distributing the financial load of the association is equaled only by the unfair legal advantages taken through close association and unduly confidential and subservient relations of the relief association officers with the companies' claim agents and attorneys. The by-laws and charters of the associations already give to the companies every reasonable financial and legal vantage ground, but these advantages are reinforced secretly and unfairly at the individual discretion of the companies' claim agents and the associations' surgeons and personnel, and always to the corresponding disadvantage of the employee.

(c) As sociological phenomena, our railroad relief associations as at present constituted are anachronisms. It has been conceded by economists for nearly a generation — and over twenty-two modern governments have now legalized the concession — that the employer should pay the bill for repairing the injured workman. Under the system we are now discussing, the employer not only manages the fund for his own best legal and financial advantage, but the employee pays the bill. Furthermore, the system is ridiculously inadequate to meet the requirements of modern society for the relief of workmen deprived of their earning capacity, and has to be supplemented by other systems equally unjust and inadequate. Considered sociologically, the release contract system of the hospital departments of the roads already briefly referred to¹⁷ is far superior to these one-sided relief associations.

When we note that the basic laws of all European states now contain provisions not only for payment by the employer of all the surgical expenses of his business, but also for suitable indemnities to employees for time lost through injury, we are struck with the weak injustice and futility of the scope and plan of these organizations, and look forward to the time when our states shall severally and collectively enact comprehensive and far-reaching workmen's compensation laws. With just and modern relief measures finally enforced by law in the United States, the railroad hospital association *as at present constituted* will disappear from the map.

607 Rush Street.

17. See Ante, p. 61, Group 3, and pp. 74 and 75

ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF THE ILLINOIS STATE MEDICAL SOCIETY

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JANUARY, 1912

THE COUNTY TUBERCULOSIS HOSPITAL

The state of Illinois seems not disposed to construct a state hospital for the care of consumptives, and as the matter now stands it appears to be up to the county to take up this matter, establish county hospitals in each of the larger counties, and arrange for district hospitals in groups of the smaller counties. The professional men of Lake County with a population of 55,000 have been conducting a hospital for several years with great success, and Rock Island County has, we believe, undertaken this work already. The following counties with a large population: Adams, Champlain, Fulton, Kane, LaSalle, Mason, McCoupin, Madison, Peoria, St. Clair, Sangamon, Vermilion, Will and Winnebago, should begin at once. The officers of the Lake County institution have furnished us with full information regarding the organization and conduct of that institution, as follows. The institution has also published a small pamphlet containing the by-laws, which no doubt will be furnished on application to Dr. Watterson of Waukegan.

HISTORY OF THE LAKE COUNTY TUBERCULOSIS INSTITUTE

We first started the institution to care for two tubercular patients that the physicians here requested me to care for. That was on July 28, 1908. By the end of the following August we had 18 patients. All funds to start the institution I personally loaned, while I had a most sacrificing nurse and excellent cook who went into the work for practically nothing until we got it started. For the

first five months I devoted my entire services for nothing. Since that I have given two-thirds of my time and about nine-tenths of my energy at a salary of \$75 per month. The original investment was about \$350 which was put into cots, mattresses, tents, bedding, dishes, second-hand stoves, etc. The head nurse and I personally paid our own way to the International Congress at Washington in the fall of 1908 where we obtained the latest ideas in methods as to building, etc., and on returning that fall we built the building shown on page 13 of the yellow booklet. At that time we were leasing five acres of land at \$12 per month. During that same fall a number of the best business and professional men of this county organized the Lake County Tuberculosis Institute and charged a membership as shown in the folder enclosed. There were about 200 members obtained. About the same time there were a few benefits pulled off amounting in all to about \$450 or \$500 by the first of January, 1909, at which time there was a meeting at which temporary directors were elected and the Beach Tent Colony, as the Sanitarium was known at that time, was purchased by the Lake County Tuberculosis Institute, they giving me what I had put into tent and equipment up to that time. Through that winter we had from 12 to 13 patients and in the following spring we held a Tag Day for three institutions in this community, the net proceeds of which amounted to a little over \$1,200 for each. A committee was appointed by the Board of Directors to choose a site and 15 acres of land, three miles west of Waukegan on Grand Avenue, was purchased for the sum of \$3,200, \$1,400 cash being paid down and a note signed by three of the Directors (the institution's note not being taken by the bank as bankable at that time) was given for this land. Since that time we have been able to cut down this note to \$1,350. We moved the institution to the grounds purchased, in June, 1909. Immediately, being on the permanent grounds, we began a more permanent series of buildings, made of wood, 14x14 as shown in the folder enclosed, and costing about \$300; and furniture for same costing about \$50 up to \$75. We now have ten such cottages. We still have some tents like the one shown in the original picture, but we are doing away with them as fast as possible and replacing them with these cottages. In the fall of 1909 the late Mr. Z. G. Simmons of Kenosha made our institution a visit and gave us \$1,000 to be put into a cement bath-house on condition we would raise a second one thousand dollars. Subscriptions were started and the business men of Waukegan soon made up, not only \$1,000 more, but soon made up sufficient, so that we were able, by the aid of a few entertainments in the winter of 1909 and 1910, to build a \$3,200 bath-house, two rooms of which were used for office and nurses' quarters. Another building almost completed is a heated 4-room building with bath accommodating two patients each. This building must be used for female employes this winter, but later will be used for patients. The cost per capita at our institution for the year 1910 was \$1.20 per day. Our rates as you see from the booklet vary from \$10 to \$12.50 per week, or if paid by the month \$40 to \$50 per month. However, we make special rates to our indigent in this county of \$1.00 per day, and by the way it might be of interest to you to know that the county supervisors are constantly trying to knock this. As to the help employed. We have a superintendent at \$100 per month, head nurse at \$60 per month, assistant nurse (not an R. N.) at \$25 per month. Kitchen force: cook, \$10 per week, two assistants at \$5 per week each, orderly, \$20 per month, farmer at \$25 per month, while there are two patients who do considerable work about the grounds, to one of whom we pay \$5 per month and to the other \$10. While this office is not exactly connected with the sanitarium yet frequently we must depend upon the sanitarium for keeping it up, but our work is along the line of conducting other works of the institution, that is, the educational, Christmas Seals, investigation of tenement houses, tubercular survey of the county, keeping up the memberships and attending to the details of the entire institution work. My stenographer gets \$20 per month, and as I told you before my salary is \$75. We make a special point of keeping our books open for investigation of a committee of our directors and we get a quarterly financial report for publication. The average cost per month for operation is about \$988.75. I think the institution lacks about \$100 per month of being

what you might call self sustaining, but believe this will be cut down much when an administration building is built, and we can purchase goods in quantities and can conduct other departments in a more systematic way, and perhaps make a uniform charge of \$2.00 per day. There are some philanthropic men now planning to build an administration building for us. We have thus far cared for 254 cases at the colony.

W. H. WATTERSON.

ILLCIT DRUG THERAPY EXPOSED

According to the *C. R. D. A. News*, Dr. A. L. Blunt, a practicing physician, with offices at 602 State Street, Chicago, and residence 4033 Perry Avenue, was captured in the act of making a sale of 2 ounces of cocaine to a woman at the coke den of George Waterman, 1812 Armour Avenue. Blunt is said to have made a confession which involved two wholesale physicians' supply houses. He made \$4 per ounce on the drugs sold. *The News* is properly gratified that the retail druggists of Chicago are not connected with the sale of the drug; less than 1 per cent. of the 1,000 druggists have been engaged in it. Summary action should be taken to stop this disgraceful practice on the part of physicians.

ORGANIZATION OF A NEW MEDICAL COLLEGE AND HOSPITAL IN CHICAGO

The following advertisement (*italics ours*) which appeared in the columns of the *Sunday Tribune* of Dec. 17, 1911, is of great interest:

Medical college and hospital being organized in Chicago on strictly legitimate line desires to interest 200 medical men; *little or no cash required*; organizer will build modern medical building on south side; rent free till institution is able to pay 5 per cent. on investment; chance of a lifetime for physicians with a couple of hundred dollars *to become known and famous*; special inducements to teachers of ability; all correspondence strictly confidential. Address O 69, Tribune.

A gentleman of high character informs us that he answered this advertisement for the purpose of uncovering the promoters and was told that F. A. Leusman, a graduate of the College of Physicians and Surgeons, Chicago, 1889, member of the Chicago Medical Society, Illinois State Medical Society and American Medical Association; fellow of the American Academy of Medicine; and professor of surgery in the Jenner Medical College, was the originator of this new school, which is to be located at Thirty-Seventh Street and Ellis Avenue, Chicago. Twenty professorships are to be farmed out to gentlemen willing to pay from \$100 to \$400 to finish the school; their old building is to be remodeled for a hospital, and a new college building is to be erected; the money for this it is alleged will be donated by some rich party. Our informer was told that sixteen of the twenty professorships had been taken. Gentlemen with money desirous of becoming famous will no doubt complete the list and another commercial enterprise will be ready for business by the beginning of the next college year. Should this be a success we may look for other enterprises of this sort in the near future. As this school does not appear to have a name we suggest to the promoter that it be called the Neurodynamic Medical College.

WORK OF THE COUNCIL ON PHARMACY AND CHEMISTRY

Some six years ago appeared a report which showed that certain preparations heralded as new chemical compounds of home production were simple acetanilid mixtures. This was the first report of the Council on Pharmacy and Chemistry of the American Medical Association, which startled the physicians of the United States and more than shocked the proprietors of the preparations considered in the report by its blunt statement of the facts.

Since then the proprietary interests have received many a shock, and the physician gradually came to realize that in the medicine business conditions had been in a most unsatisfactory condition. Gradually, however, conditions have become tolerable, or at least the facts regarding the many proprietaries have been made available. Through the simple expedient of fearlessly publishing facts, the Council has corrected conditions, some of which were not known to exist, while others were so fixed that it was thought they could not be altered.

The proprietary remedies on the market having all been examined and assigned to their proper places, the output of new articles which the Council must take up was sufficiently limited so that it was found a few years ago that it could broaden its field of work. This was done by taking up the host of little-used drugs which are freely sold by every dealer in drugs but in which not sufficient interest is taken to guarantee their quality. This line of investigation has done much to convince physicians that they should stick to the well-known and widely-used remedies unless they have full assurances that the little-used drug is of good grade and of positive therapeutic value.

More recently the Council has determined to study the effects of patents and trademarks on medicine. Its first reports indicate that through tolerance certain abuses in relation to patents have become established which are in urgent need of correction. Thus it is shown that through a misuse of the law, many products have enjoyed patent protection long after the patent had expired. Also that certain products have been granted patent protection which are not so protected in any other country—not even in the land of their origin. Protection, secured where none is deserved, can be but a hindrance to progress in medicine, and hence it is to be hoped that the simple educational program which is proposed will have the desired results.

Now the Council proposes (*The Journal A. M. A.*, Dec. 9, 1911, p. 1930) to attack the fundamental cause of the proprietary medicine evil, namely, the insufficient training in materia medica and therapeutics which our medical students receive. As a first step the Council proposes that the number of drugs which are to be treated in such a course shall be restricted to the really important drugs, which then may be studied thoroughly. As the Council is using great care in the compilation of this list, it is to be hoped that, when finally prepared, it may be adopted by all schools and by all examining boards.

AN OLD PHOTOGRAPH

By the kindness of Dr. J. Palmer Matthews, of Carlinville, worthy son of one of the honored Presidents of the State Society, and himself active in local society work for a number of years, we have come into possession of a photograph of the members of the State Society taken May 17, 1871. On turning to the *Transactions* of that year, we find the following interesting reference to the excursion during which the photograph was taken:

"On motion of Professor E. L. Holmes, the society adjourned to meet at 4 o'clock, p. m. In the afternoon, an excursion by rail was taken to Prospect Hill. Owing to the late railway war, and the blocking up of the track, the train did not leave until nearly 4 o'clock, though the time announced for its departure was 2 o'clock. The Committee of Arrangements did all they could to hurry the departure, but could not control the matter, and are not to blame for the delay. Though the members were compelled to wait for a time at the foot of Hamilton Street, they took the matter good naturedly.

"The number of citizens accompanying the excursion was limited. The train stopped at the residence of R. M. Cole, Esq., where three fine photographs were taken of the society. This also consumed time, and the stay at Prospect Hill was necessarily very short. It gave the society, however, an opportunity of obtaining a fine view of the country from the hill, and many were the exclamations of pleasure at the prospect presented."

Of all of those present at the meeting of 1871, we find only the names of Drs. T. J. Pitner, of Jacksonville, and C. C. Hunt of Dixon, among the living. The number of physicians and laymen in the photograph shows 131 gentlemen, three members of the band, five ladies and one infant. One of the ladies had hoisted a parasol in such a way as to absolutely hide the face of the gentleman behind her, and the only part of this individual visible is his derby hat, which appears to be suspended either on the parasol or in the branches of a neighboring tree.

This was the long whiskered era of the society, and almost without exception the learned Æsculapians appeared with a full set of whiskers, remarkable in length. Among the few clean faces is that of Dr. N. S. Davis, whose classic countenance, as long as we knew him, was always wreathed in a set of Galways. Near him sits Dr. Hosmer A. Johnson, his constant companion and friend, and Dr. John H. Hollister, then and for many years treasurer of the State Society, and Dr. David Prince, of Jacksonville.

Although we have been familiar with the members of the state organization for many years, these are the only faces in the photograph recognized by us. Unfortunately the group is so large that it would be impossible to make a cut of the photograph for the columns of THE JOURNAL, but it will be placed on exhibition at the Springfield meeting, where it is hoped other faces may be identified, and a key to the photograph arranged before it is forever too late.

In 1875 at the Jacksonville meeting another photograph of the members was taken, and this, reduced, appears in the *Transactions* of that year. Unfortunately, the faces are so small in the copy that it is almost impossible to make out the features, and for this reason the Peoria photograph, four years older, must be considered as much more valuable, even though it may not be reproduced on the printed page.

DR. H. W. WILEY

To those patriots, such as the editors of *The Modern Miller* of St. Louis, *The Rocky Mountain Druggist* of Denver, and others whose criticisms have been sent us recently from a New York City address, we commend the following resolutions, which were adopted by the Medical Society of the District of Columbia, Oct. 11, 1911:

"While in common with many other scientific bodies, and with the American people in general, we, the members of the Medical Society of the District of Columbia, have been deeply interested in the recent investigation of the work of Dr. Harvey W. Wiley, Chief of the Bureau of Chemistry in the Department of Agriculture, in his efforts to secure the enforcement of the Pure Food Regulations, etc., and while Dr. Wiley is personally known to many of us as 'a man resolved and steady to his trust, inflexible to ill, and obstinately just'; therefore,

"*Resolved*, 1. That we heartily rejoice that Dr. Wiley has been completely exonerated from any alleged wrong-doing, and that his methods and principles have been fully vindicated;

"2. That we extend to Dr. Wiley our sincere congratulations, and

"3. That we beg to present to the President of the United States our grateful and humble commendation for the justice, wisdom and impartiality displayed in his settlement of the dispute, a commendation which we believe is enthusiastically shared by the entire American people.

"(Signed)

A. F. A. KING,

"THOMAS N. McLAUGHLIN,

"GEORGE M. KOBER."

The following replies were received by the corresponding secretary:

"THE WHITE HOUSE,

"WASHINGTON, D. C., Oct. 21, 1911.

"My Dear Sir:

"Your letter of the 20th instant transmitting a copy of the resolutions passed by the Medical Society of the District of Columbia commendatory of the President's action in the Wiley case has been received and I will have pleasure in forwarding it to the President, in whose behalf permit me to thank you for your courtesy in the matter.

"Very truly yours, (Signed) RUDOLPH FORSTER."

"COSMOS CLUB,

"WASHINGTON, D. C., Oct. 21, 1911.

"Dear Dr. Smith:

"I am just in receipt of your note of the 20th instant transmitting to me the resolutions passed by the Medical Society of the District of Colum-

bia congratulating me on my vindication from the charges which had been made against me in the Department of Agriculture. I need not assure you that among all the congratulatory messages that I have received none is more appreciated than this action of my medical brethren in this city. The saying that 'a prophet is not without honor save in his own country' does not hold here. Being personally acquainted with large numbers of the members of the Society makes this mark of confidence all the more grateful.

"I beg to thank you and, through you, the Society for this mark of their cordial esteem.

I am faithfully,

"(Signed) H. W. WILEY."

HOTEL ACCOMMODATIONS AT SPRINGFIELD

Some months ago we made particular mention of the New Leland Hotel, which will be the headquarters for the next meeting of the State Society. We did not of course intend to give the impression that the Leland Hotel is the only first-class hotel in the city. On the contrary, we are pleased to state it is only one of the number of the excellent hostleries prepared to give comfortable housing to any number of members who attend the meeting. The names of the principle hotels with the number of beds in each, are the New Leland and Annex, 235; the St. Nicholas and Annex and the Hotel Silas, under one management, 400; Illinois, 250; Windsor, 50; Collins House, 100; Southern, 75; a total of 1,100.

Springfield during the meeting of the State Fair accommodates from 8,000 to 10,000 visitors, and could, without difficulty, take care of every one of the 5,500 members of the State Society.

A cordial invitation will be extended to every member of the organization to be present during the entire meeting of the society, and it is believed that the attendance will be of a record breaking character.

COMPLIMENTARY BANQUET TO DR. O. B. WILL

The Peoria City Medical Society will give a complimentary banquet to Dr. O. B. Will, Tuesday evening, Jan. 23, 1912, at the Creve Cœur Club. Invitation is extended to the profession to participate in the meeting. Those desiring to attend should send \$3 to Dr. C. U. Collins, 427 Jefferson Building, Peoria, Ill., for tickets of admission.

REMUNERATION OF THE PHYSICIAN IN THE EIGHTEENTH CENTURY

"The physician had not then become the priest and natural confessor of the American household, as he is to-day; but he was of great importance in the social system. His education through books was scanty.

judged by modern standards, while a large knowledge of humankind drawn from direct observation served to bring him into close accord with his patients. Apothecaries were hardly known outside of the large towns: for the doctors' saddlebags carried the simple pharmacy to the remotest hut. Cheerfully those public servants toiled over the hardest roads, in every season and in all weather, to attend rich and poor alike; the country doctor could not choose his patients if he would. A rigid standard of custom gave his services to all who needed them, fees being hardly considered when anyone needed medical attendance.

"The fees were very modest. Even in Boston, prior to 1782, the ordinary visit was charged at 1 shilling 6 pence to 2 shillings. Half a dollar was only charged 'such as were in high life.' In that year a club of the leading physicians fixed the common fee at 50 cents, in consultation at \$1. Night visits were doubled: midwifery was at \$8: capital operations in surgery, at \$5 lawful money: medicines were charged at very high prices, comparatively."—Weeden: Economic and Social History of New England, 1620-1789, Vol. ii, page 863.

Correspondence

CIVIL SERVICE VS. THE CONSTITUTION

PEORIA, ILL., Dec. 20, 1911.

To the Editor: Anent the discussion of the retirement of the present incumbents of the Illinois State Board of Health, permit me to make a few references to the point at issue. The question has been raised. Is the *man-Egan* made a permanent fixture by the civil service act recently enacted? The answer is No, *most clear and decided*, as you will perceive by referring to the Illinois constitution of 1870, under which all present laws operate. Article IV under title of Legislative Department and again under Miscellaneous Subjects, paragraph 28, states: *No law shall be passed which shall operate to extend the term of any public officer after his election or appointment.*

This will settle the point very readily and enable action to be taken that should bring about a definite settlement of the new proposed state board of health. Free use of this information disseminated in your editorials will satisfy many seekers after such knowledge.

Very respectfully yours,

O. V. BERRY.

EVANSTON, ILL., Dec. 28, 1911.

To the Editor: In reply to the question which you sent to me last week, with a copy of a letter from O. V. Berry, I now make the following reply:

First: I have not found your question directly answered in any case, so far as I have been able to investigate.

Secondly: By implication I find it answered many times, and always the same way. Thus, Meechem, Public Officers, 389, says:

"So in the absence of such constitutional prohibitions the legislature may change the length of the term, even after the election or appointment, though it is held that such a change will not be deemed to affect the term of the present incumbent in the absence of a clearly expressed intention so to do."—*Farrell v. Pingree*, 16 Pac. Rep. 843.

Throop, also, Public Officers, 19, uses similar language. In our own supreme court we find a similar statement. In *People v. Loeffler*, 175 Ill. 585, the court says that an office created by statute is wholly within control of the legislature, and unless forbidden by the constitution the length of term and the mode of appointment may be altered by the legislature at pleasure. I have not noticed that our court has taken official notice that there is such a limitation as to changing the term of office after appointment, except in *People v. Lippincott*, 67 Ill. 333, soon after the present constitution was adopted, and therein I found no reference to Art. IV, Sec. 28, but only to the temporary provisions of the schedule. In *People v. Loeffler*, cited above, we are told that the definition of an officer, as found in Art. V, Sec. 24, of the constitution, refers to state officers only by strict interpretation. This section says:

"An office is a public position created by the constitution or law, continuing during the pleasure of the appointing power, or for a fixed time, with a successor elected or appointed."

Chapter 126a of the Revised Statutes, Sec. 1, provides for the appointment of members of a state board of health, by the governor, by and with the advice and consent of the senate. It provides that the term of office shall be seven years for each member, except those first appointed. This term therefore is definitely fixed by the statute. Section 10 provides that the board shall meet in January and July of each year, and that the meeting in January shall be in Springfield. That a majority shall constitute a quorum. That they shall choose one of their number to be president. By context, and by implication, but not expressly stated, we are to infer that this choice shall be made at the January meeting, and for one year. With the change of one member at the beginning of the year a new board would be formed, and the new member has the legal right to a share in the election, according to the common law.

Sec. 11 of this same chapter, 126a, provides: "They shall elect a secretary . . . and by this act he shall receive a salary which shall be fixed by the board. . . . The other members of the board shall receive no compensation." This section does not definitely state the term of the office of secretary, but by implication this should be understood as for one year, or until the next annual election. This has been the practice of the board. By annually holding an election, and by consenting annually to be elected, the present incumbent has acquiesced in that interpretation, and he may therefore be estopped now, for his own advantage, from claiming that his election was for more than one year.

The expression in Sec. 11, "The other members of the board," clearly implies that the secretary must be a member of the board. That being

so, he could not be lawfully elected secretary for a term exceeding his term as a member of the board. The term of office as a member of the board expired for Dr. Egan, the present acting secretary, Dec. 31, 1907. There is no provision in the statutes that the term of office of a member of the board shall extend beyond the period for which he is appointed. The general rule is well stated by Meechem, *Public Officers*, 396: "Upon the expiration of the officer's term, unless he is authorized by law to hold over, his rights, duties and authority as a public officer must, *ipso facto*, cease" (citing *Badger v. U. S.*, 93 U. S. 599, and *People v. Tieman*, 30 Barb. 193).

As a member of the board therefore Dr. Egan is *de facto*, not *de jure*. The law could not grant to him as a *de facto* officer that which he could not have as a lawful holder of the position.

Article IV of the constitution of 1870, Sec. 28, distinctly states: "No law shall be passed which shall operate to extend the term of any public officer after his election or appointment." There can be no question as to this prohibition. The definition of an officer, cited above from the constitution, comes after this section, and clearly applies to this section. The supreme court says that this refers to state officers. The statute providing for the board makes the provision for the appointment, and for the appointment of a successor. If the term is not fixed by the statute, it is left for the board to decide, so that he holds his office at the pleasure of the appointing power. Therefore the office of secretary of the state board of health is a public office, within the meaning of the definition in Art. V, Sec. 24, of the constitution. Therefore it is not within the power of the legislature to extend this term, beyond the time for which the present incumbent was appointed. Therefore the new civil service code cannot extend the present term of Dr. Egan as secretary of the state board.

As I have previously told you, this fact does not remove Dr. Egan. He has no legal title to the office, but he is there; just as "they can't put you in jail for that." "but I'm here." The points in law are worthless unless they are used. There is only one way to make them effective. That is by information in the nature of *quo warranto*.

HENRY B. HEMENWAY.

SOME OF THE APPARENT REASONS WHY ILLEGAL PRACTITIONERS AND QUACKERY FLOURISH IN ILLINOIS

EFFINGHAM, ILL., Dec. 18, 1911.

To the Editor: The more one studies and investigates the quack situation in Illinois, the more interesting it becomes, and the more one is forced to look on Illinois as being a "plague spot" of illegal practice and quackery, as well as "one of the plague spots of this country in medical education, medical examination and medical licensure." to quote from a resolution passed by the Southern Illinois Medical Association

in 1909. If the profession but appreciated that this state is as rotten in the matter of illegal practice and quackery as it is, I am sure resolutions would be going up from every county and district society within the state.

The physicians of this state have become tolerant and indifferent; one physician wrote me recently: "In fact I have found all this reporting of cases so unsatisfactory that I have given up in disgust." I am led to believe by letters I have received from nearly all over the state that too many physicians have "given up in disgust," for the same reason.

I received a letter a few days ago in which the writer relates the following conversation had with an illegal practitioner, by the name of George W. R., while on a train: "On Monday, December 4, I met George W. R. on the train; he told me he had been to Neoga. He said it was his second visit there, and said he had a strange case—a fellow had taken a very hot bath, then a cold one, and he suddenly became blind and deaf. He said he was called to see another patient there, and this man hearing he was in town sent for him. He responded; looked him over and gave him a *mixed treatment of massage-osteopathy and suggestion*. He further said that during his conversation with this patient he learned that he wanted to go to see 'Billy' Smith of St. Elmo; he advised that the patient do so then, which he did, but on this day—December 4—he had George W. R." (illegal practitioner of massage-osteopathy and suggestion, to use his own words) "come to see him again. The patient said," so the said George W. R. told my physician friend, "that he had been to see Smith and that he got just the same treatment that George W. R. had given him, only that he liked the latter's treatment better. Then I asked him" (said the physician in his letter to me) "what sort of arrangement he had with the secretary of the State Board of Health that would allow him to practice in this way. The illegal practitioner said: 'None: you know the law and you ought to know I have no right to practice; but as long as I am not called down, I am going to continue.'"

No one knows better than this class of fellows that they have no legal right to practice in Illinois. I know that Dr. Egan has been written to concerning the practice of this man, too. Here we learn again that "Faith Healer" Smith of St. Elmo is using material means, but to quote Dr. Egan in part, in a letter to a physician recently, wherein the latter had reported an instance of rubbing and pinching the knee in his (Smith's) treatment, Dr. Egan says: "And will repeat that so long as he [Smith] confines his treatment to mental means, the State Board of Health can take no action against him: it is only when he uses a material remedy, when the Board is empowered to act. In this connection I will say, referring to the patient there at ————, it is questionable whether the 'pinching' of the knee, which might be claimed to be for diagnostic purposes, would constitute a treatment. Here you must bear in mind that a diagnosis of a disease is not a violation of the law."

Dr. Egan also insisted to me a few weeks ago in a personal conversation that Smith of St. Elmo would be able to show that the rubbing he did was done in his effort to make a diagnosis. *Ridiculous nonsense!* What right have such non-medical men to exist as diagnosticians? If this is the best excuse that can be made for their existence, I will leave it to the profession to decide how flimsy it is. Men of this type are not known as diagnosticians; the people themselves do not so understand them. They are known essentially as "treaters" and the "treatment" which makes each particular one of them known to the public is what people visit them for.

On Oct. 21, 1911, Dr. Egan wrote me in part as follows: "If Prichard is treating a great many cases in the neighborhood of Chrisman, it seems strange the State Board of Health has not heard of it, for physicians in Edgar County have notified the State Board of Health of violations of the law, and there is a very energetic state's attorney in that county who will promptly prosecute Prichard or any one else. I am afraid we have again a case of 'street gossip.'"

I was very glad indeed to receive this intelligence from Dr. Egan, which seemed assuring that Illinois had at least one clean spot — one county happily free from illegal practitioners and quackery, but imagine my sore disappointment on receiving the following letters from prominent physicians in Paris, the county seat of Edgar County (of which county Dr. Egan had written me so assuringly).

The first is as follows: "I am intensely interested in your contribution to the December ILLINOIS MEDICAL JOURNAL. However, some of the statements need comment, especially in regard to the Edgar County portions.

"That our Edgar County physicians have been active in attempting to weed out irregular practitioners, is true. But that our state's attorney shows any inclination to be 'energetic' in a prosecution of any one any time, is a joke. In one instance, at least, overwhelming proofs concerning a case of this nature were brought to him, but were ignored. If he has prosecuted a *single* case of this nature, I have yet to be informed. Personally he is a gentleman, but like all others in his position, doubtless interprets any action on our part as mere jealousy and fails to act. So that the gentleman who informed you thus has another think coming. Edgar County is, and has been for many years, a hotbed of quackery.

"To repeat, we have been energetic in our attempts but have accomplished nothing. Long ago we saw the futility of calling to our assistance any red tape authorities. It seems to be a difficult proposition to convince those who apparently have no desire to be enlightened. I recall several instances where every barrier was placed in the path of the applicant for medical license, although the men tried to enter by the front way — whereas the irregulars and quacks rake in the shillings and kill the people unchallenged. It is claimed that a very high percentage of 'Skinem' Smith's victims come from this county, though at present we also boast of a real healer who has been brought here. I understand, by the so-called 'Boosters' of Paris.

"To classify our wealth of quackery for the past few years would be impossible. There are so many of these scoundrels, that it is not strange we have never heard of this 'Prichard.' Some of our physicians may know him. Certain 'traveling physicians' come regularly to the hotels. Some treat diseases for the poor 'gratis.' Many of these may be licensed. But many are not. One man, 'Lewis,' became a very popular cancer doctor in the neighborhood of Chrisman and Ridgefarm. But he decided to enter other fields. Before leaving Paris, this ignoramus offered me his 'formula' for \$1,000. Another gentleman, hailing from Danville, north of here, offered me sole rights for Edgar County for a never-fail pile cure, for \$100. I note that this is being pushed on the laity as a patent nostrum. We have seen many of those persons returning from St. Elmo. Just at present we are trying ridicule; it is all we can do, but of course very ineffective."

The second, in part, is as follows: "As you no doubt know, hundreds of our citizens have visited your St. Elmo fraud, and one of our enterprising hotel men recently imported a healer from Indiana who has made two two-day stands here and treated about 400 people. Some three years ago the physicians here tried to start proceedings against one of our osteopaths for using hypodermic medication. The most that Egan would do was to authorize our state's attorney to prosecute—which really amounted to very little, as he already had the authority by virtue of his office. Our state's attorney is a nice fellow who likes to be popular with everybody, and he is a better promiser than performer. However, the osteopath took fright and decamped.

"The Indiana 'magnetic healer' I have mentioned is not registered with our county clerk. He dispenses healing by the 'laying on of hands' (probably doped with vaselin and capsicum). He offered to treat one cancer patient with a plaster. He is said to be a graduate in osteopathy, but does not pose as such. I can furnish you dozens of names of people he has treated if you want them. Our state's attorney has never prosecuted a case of illegal practice to my knowledge, and Egan's assurance of his activity is bosh."

A third letter from Paris, in part, has the following to say: "I do not know that he [Prichard] was ever reported to Dr. Egan, but I do know that Dr. ——— and Dr. ——— reported Dr. Davis, an osteopath, who was doing illegal practice. They had convicting evidence against this man Davis, and Dr. Egan answered saying that he would notify the state's attorney and have him prosecuted. Dr. Davis was using medicines hypodermically, internally and externally. Nothing more was heard from either Dr. Egan or the state's attorney, and feeling that the profession had no support, the matter was dropped."

Here again I will leave it to the profession of the state to decide for themselves, how free from illegal practitioners and quackery Edgar County must be and how energetically the state's attorney referred to above by Dr. Egan, "will promptly prosecute Prichard or any one else." Is it surprising that physicians all over the state have "given up in disgust"?

I will cite one more instance which might tend to show why illegal practitioners and quackery flourish in this state: It was probably about the last of the year 1905 or the beginning of 1906, when a physician, whom we will call Dr. A., dropped into Effingham with considerable flutter. He was not registered in the state. However, he did some family practice, hunted up a few cases of hemorrhoids, contracting them into treatment in the typical quack manner, did a little abdominal surgery, in fact, nothing was too great a task for him, nor too responsible if the money was in sight. He soon incurred the enmity of one of our physicians, who took the matter up with Dr. Egan, and finally on May 15, 1906, a summons was ordered for Dr. A., returnable May 29, at 10 a. m. The summons was served, and Dr. A. appeared in the justice court as ordered.

The record of the court in the case in part is as follows: "May 29, 1906, 10 a. m. comes Dr. A.; waives trial by jury and enters plea of guilty, whereupon it is ordered that said defendant make his fine unto the people of the state of Illinois for the use of the State Board of Health in the sum of \$100 and pay the costs of this proceeding, and in default of same, that he be committed to jail."

Immediately Dr. A. called on another physician whom we will call Dr. B. The following information was all given me by Dr. B. and is as follows: Dr. A. asked Dr. B. for a loan of \$10, telling him that he had just been fined \$100 and that he had no money, and that he must see Dr. Egan at Springfield about the matter (so Dr. B. informed me). The report to me further is that on Dr. A.'s return from Springfield (where he told Dr. B. he had been, so the latter informed me), he informed Dr. B. that if he could control the physician in Effingham who had crowded Dr. Egan into the suit against him, and whom we will now know as Dr. C., that he (Dr. A.) had things fixed at Springfield for \$50 in such a way that he would not have to pay his fine, and that he could continue his practice at this place.

Dr. B.'s information is to me that he (Dr. B.) had a talk with Dr. C., who had urged the suit into existence, and that the latter informed him that as long as Dr. A., the unlicensed physician, would keep out of his way and let him and his patients alone, that for the time being at least, he would not interfere further.

Dr. B. informed me further as follows: that when he thus informed Dr. A., the latter in the meantime having collected \$30, then borrowed \$20 from a business firm, and he then told Dr. B. (so the latter told me) that he was sending the \$50 to *the fellows* at Springfield (not mentioning any particular name at the time) which he said (according to Dr. B.'s report to me) would allow him to stay in this community without paying his fine, as long as Dr. C. would not further urge the matter.

Dr. B. informed me that this man remained in this territory for three or four months longer. On looking up the records of the trial (also the state's attorney's reports till well up into 1907), I find no mention of any part of the fine or costs ever having been paid, nor was any jail sentence ever served.

I do not know at what time in 1906 Dr. A. left this community, but on going to one of our business firms here, where I had understood credit had been extended to him, they looked up their credit account with Dr. A. and found that the last purchase charged to his account was on Aug. 28, 1906. This firm does not know how soon after August 28 Dr. A. left, but I am inclined to think it was shortly afterward, as from the reports which have reached me many times, the time finally came when he could not obtain further credit, and when his creditors were after him so closely that he found it necessary to make a hastily retreat to greener fields.

Dr. A. did not tell Dr. B. that he was sending the \$50 to Dr. Egan; neither do I say so; but he did tell him in the first place, when he borrowed the \$10 from Dr. B. (so the latter informed me) that he must go to Springfield to see Dr. Egan about this matter. On his return (from wherever he went) Dr. B. informed me that he (Dr. A.) told him that he had things fixed at Springfield if Dr. C. could be induced to drop the fight and when this was done by Dr. B., then Dr. A. (so Dr. B. further informed me) told Dr. B. he had collected \$30 and was going down town to borrow \$20 more. Dr. A. then told Dr. B. (so the latter informed me) that he was sending the \$50 to *the fellows* at Springfield, which was for the purpose of allowing him to continue his work at this place, without paying his fine, and without further prosecution, if Dr. C. did not urge the matter.

Now I am not saying that Dr. A. was ever granted this apparent immunity by Dr. Egan, nor by any one else, nor that Dr. Egan ever received the \$50 which Dr. A. said (according to Dr. B.) that he was sending to *the fellows* at Springfield, nor in fact that Dr. Egan ever saw or corresponded with Dr. A., but I do say that there is no record in the justice's court where the trial was had, nor any in the state's attorney's reports up into 1907, to show that any part of this \$100 fine was ever paid, nor the costs as well, nor was he ever committed to jail in default of same. He continued to practice in this community for at least another three months, and as far as I have been able to find out, without further interference by the Board, finally, it seems, having been forced to leave by his creditors, or because of lack of further credit.

From the correspondence I have had with physicians in various parts of the state, I am led to believe that prosecutions by the State Board of Health for violation of the medical practice act, have been relatively very few in the last ten years, especially outside of Chicago, notwithstanding the fact that the state is full of all classes of violators of the law. There seem to be a very large number of so-called cancer doctors and it is needless to say that very few, if any of them, have any medical education at all. They are rank and open violators of the medical practice act, and I am very sure that their applications of plasters, ointments, etc., cannot be construed as an "effort to make a diagnosis;" yet I have not been able to find where one of them has been prosecuted outside of Chicago, yet I am not assuming that such has not been done.

On Oct. 21, 1911, Dr. Egan wrote concerning the cancer quack in part as follows: "But the itinerant cancer specialist is everywhere. He

flits from state to state, county to county and town to town. He is here to-day and somewhere else to-morrow." From what I have been able to learn thus far, ours have quit "flitting;" when it can be shown that such men as these have been practicing steadily in one neighborhood for several years, it would not appear, as Dr. Egan states above, that "he is here to-day and somewhere else to-morrow." It would appear that he had "lit" to stay.

It is true that under our present law many are practicing within the state so restrictedly that it would be a very difficult matter to convict them; but the larger part of the violators of the medical practice act are violating it openly and boldly and many have been doing so for years within the same neighborhood. I know one cancer quack who has been treating patients within the same neighborhood for six or eight years: Dr. Egan was notified of this fact almost if not quite five years ago, according to the statements two physicians have made to me, who reported this man themselves. The man has never been prosecuted, has apparently been openly violating the law continuously ever since he began, has practiced within the same limited territory all of this time, is still doing so, and no prosecution has ever been filed against him.

I am going to take this means of asking either the president or secretary of each of the county medical societies in the state to write me first, as to the illegal practitioners and quacks at work within their county; second, what if any violators of the medical practice act have ever been prosecuted within your respective county within the last ten years; third, whether or not any violators of this law have been reported to Dr. Egan in your county within the last ten years. This is a matter in which the profession of the state should be very much interested, especially the organized element of it. If illegal practitioners are at work Dr. Egan should be notified of that fact; then if nothing is done, the question which appears in the minds of all of us is, WHY?

F. BUCKMASTER.

MORAL AND ETHICAL EFFECTS OF THE DISPENSING DOCTOR

To the Editor: I wish to discuss the paper on "The Moral and Ethical Effects of the Dispensing Doctor," by Dr. I. C. Walker of Williamson County, which appears on page 736, December JOURNAL.

I am not surprised that the doctor does not know just what the M.D. degree covers. I see by the American Medical Directory that Dr. Walker is a graduate from St. Louis College of Physicians and Surgeons, of which, under "News of the State," the December JOURNAL says: "The notorious College of Physicians and Surgeons of St. Louis is extinct."

My physician's certificate authorizes me to practice medicine in the state of Illinois. It does not say write prescriptions and let the druggist practice medicine. In my judgment a physician who is not competent to dispense is not competent to write prescriptions. Drugs are a part of

our working tools, by the use of which we alleviate pain and combat disease. According to Dr. Walker's idea, if I should get a call to a case of poisoning 10 miles from a drug store I would be compelled by ethics, morals or law to write a prescription, give it to a member of the family, and return home. The party would get out his horse and take a hike for the drug store. The chances are that the undertaker would get a call to come out before the party reached the drug store. Dr. Walker might think this is a different proposition but it is not. If a doctor is allowed to administer drugs in an emergency when all are excited and nervous, where a mistake might be made on account of the confusion, could he not be allowed to leave medicines for a patient where all was quiet and he could take time and be sure he administered what he intended to?

And when a patient came to his office could he not go to his shelves, which he keeps stocked with fresh drugs, the best he can buy, because his success depends on the action and results he gets from his drugs? Not so with the druggist: his success depends on the profit he gets out of his drugs.

Every dispensing physician carries everything needed for emergencies. He keeps posted on all kinds of medication. If he does not have exactly what some chronic case needs he can get it inside of twenty-four hours. I find that druggists do not carry everything in the drug line. If they do not have what your prescription calls for they will either substitute or call up the doctor and he will change the prescription to conform with the druggist's stock, which would be lawful for him to do but unlawful for the dispensing doctor to substitute from his own shelves.

How many druggists make their fluid extracts, tinctures and pills? We doctors can buy them where they do and we know just how much and what we will expect to use in the next few weeks and thereby we can avoid having a lot of old stock on hand. Probably this is why Dr. Walker thinks the doctor has a very inadequate little stock.

Can we not count out pills and tablets as accurately as a registered pharmacist? The retail druggist gets his elixirs, pills and tablets from the same pharmacist as does the dispensing doctor.

If I give a patient medicine and he thinks he needs more he will return and if I think he needs a change I will make the change. If he thinks his neighbor is suffering from the same trouble he is, he will send him to me instead of giving him his bottle to have filled at the drug store without my knowledge or permission.

Our druggist will do anything from counter prescribing and guaranteeing any old kind of patent medicine to attending obstetrics, should he get the chance. His clerk had the nerve to call me up on the 'phone to ask me what he should give a party who called for something to kill lice.

I was called to see a case only a few days ago; the patient had worked in the drug store a little while and as he just had a little stomachache he thought he would have the druggist fix him a dose. The druggist fixed up 6 ounces of dope which contained whisky, pepper, ginger, syrup and several other ingredients but no water. The boy drank it and started home. He got into the house and fell to the floor suffering intense pain

and lapsed into unconsciousness and did not know when his folks telephoned for me, although he was lying under the 'phone. I found him in a profuse sweat, pulse very weak, and semiconscious. I did not stop to write a prescription but gave an emetic and an enema, got the dope out of him and in a few hours he was all right.

When a druggist does that kind of business I do not think we should be compelled by ethics, morals or laws to turn our business over to them and "*thrust this formidable imposition on a confiding public*," as Dr. Walker says.

The dispensing physician does more than any other one thing to head off the irregulars.

I do not know Dr. Walker but I do know doctors who are under obligations to the druggist who furnishes him free office rent and gives him a commission on his prescriptions.

Still if he is a graduate of the P. & S., St. Louis, this is reason enough for his writing such a paper. I congratulate him that he has learned enough since leaving school to not monkey with drugs if he knows nothing about them but to let some druggist protect the public from his possible errors in prescription writing. This letter might sound a little personal. So is his personal and it hits more than half the members of the State Society, "and there should be chaos" among that number. If this is not Dr. Isaac Cecil Walker of Marion, Ill., these references to his medical training shall be stricken from the records.

One reading his paper would think he had hold of *N. A. R. D. Notes* instead of our official organ. The retail druggists are not so radical as he.

C. O. NELMS, M.D., Herscher, Ill.

THE DEBARTHE RHEUMATISM CURE

The old Chicago hospital having been turned over to a "three-day liquor-cure" known as the Neal Institute, has now made the DeBarthe Rheumatism Cure a part of this Institute. The DeBarthe cure is now being advertised in the Chicago papers in the usual patent medicine style. After stating that James E. Bruce is president of both the Neal Institute and of the DeBarthe Treatment, *The Journal A. M. A.* (Dec. 16, 1911, p. 2014) says:

"On the stationery of the DeBarthe concern, in addition to the president's name, two other names appear — "John Alexander Ross, Physician in Charge," and "Dr. Jos. DeBarthe, Director Medical Dept." What the DeBarthe treatment is, we do not know."

So far as we can learn, DeBarthe is not a physician. Certainly he is not licensed in Illinois. We understand that DeBarthe used to live at Sheridan, Wyo., where he was a lawyer and a newspaper man. He left there some time ago and coming to Chicago he was connected with the Metropolitan Medical College, a notorious diploma mill that was put out of business by the government.

COUNTY AND DISTRICT SOCIETIES

ADAMS COUNTY

The annual meeting of the Adams County Medical Society was held Dec. 11, 1911, at the Elk's Club Rooms, with President Knox in the chair. Others present were: Drs. Nickerson, Blickhan, Ball, Bloomer, Brenner, Austin, Center, Christic, Ericsen, Gabriel, Groves, Knapp, Shawgo, J. B. and Kirk, Gilliland, Millen, Mercer, Pearce, Pendleton, Pittman, Schullian, Spence, Stine, Pfeiffer, Werner, Williams, Koch, Wells and Weisenhorn. Dr. Nickerson reported the matter of telephone consolidation still in controversy. For a number of years the society has had in its possession a number of pamphlets explaining the "Great American Fraud"; after some discussion the secretary was instructed to send copies of the same to the ministers, also to the teachers of the public and private schools of the city.

Dr. Nickerson read a paper concerning the "National League for Medical Freedom." The application of Dr. C. I. Tripp was read by the secretary and referred to the board of censors. The matter of the election of officers was then taken up. Drs. Erickson and Pfeiffer being appointed tellers. The result of the election was as follows: president, J. H. Pittman, Camp Point; 1st vice-president, Ray Mercer, Loraine; 2nd vice-president, Kirk Shawgo, Quincy; secretary, Elizabeth Ball, Quincy; treasurer, R. J. Christie, Quincy; censors: H. P. Beirne, Quincy; D. M. Knapp, Mendon, and F. T. Brenner, Quincy; defense committee John A. Koch, Quincy; library committee, C. E. Ericsen, F. M. Pendleton, E. B. Montgomery, all of Quincy.

Adjournment to Hotel Quincy for luncheon. In the afternoon Dr. R. J. Christie gave an interesting account of the meeting of the American Surgeons' Congress, which took place in Philadelphia, in November. The Doctor spoke especially about Dr. Clark, gynecological specialist, who was a guest at the State meeting held in Aurora, May, 1911. He told about the results of spinal anesthesia as practiced by Dr. Babcock.

Among others who were mentioned by Dr. Christie were, Drs. Deaver, Da-Costa, Foster, J. N. Mayo, of Rochester, Minnesota, and A. J. Ochsner, of Chicago. The new president deferred the appointment of his various committees until the January meeting. Adjourned.

ELIZABETH BALL, Secretary.

COOK COUNTY

CHICAGO MEDICAL SOCIETY

THE FARCE OF MEDICAL ETHICS*

(Abstract)

A Reply to the Article by Arno Dosch in *Pearson's Magazine* for September.

Dr. H. J. Achard read a paper on the above subject before the North Shore Branch of the Chicago Medical Society, November 7, which appeared in condensed form in the *Chicago Medical Recorder* for December 15. The paper was suggested, as is indicated in the title, by an article in *Pearson's Magazine* in which the secret division of fees and the paying of commissions by surgeons and specialists has been made the subject of a denunciation of the medical profession which is not only overdrawn but unfair, and decidedly of the muck-raking type. According to Mr. Dosch, fee-splitting cannot be put down because of the false code of ethics which refuses to allow light on anything that concerns the medical profession. The article is based upon the report to the Erie County Medical Society of its committee on fee-splitting, published in the *Buffalo Medical Journal* for March, 1911.

* Read before the North Shore Branch of the Chicago Medical Society, Nov. 7, 1911.

Dr. Achard does not, of course, deny that secret fee-splitting prevail- and that it is an evil practice, nor does he defend it, but he does deny that it influences the patient and the public at large as unfavorably as is claimed. Further, it is not as generally prevalent as has been asserted; in fact, it may be said that the majority of surgeons and specialists do not pay commissions, either secretly or openly, and the majority of general practitioners referring cases for operative or for general treatment do not demand or expect a commission. Of those who do pay or receive commissions, a considerable proportion do so openly, as appeared later during the discussion. It cannot be denied that there are physicians and surgeons who exploit their patients deliberately, more for the purpose of obtaining money than of benefiting him, but such men are rather exceptions.

The cause of fee-splitting, secret or open, is claimed by the author to lie in the unfortunate position in which the general practitioner finds himself through his own carelessness, partly, for many years back, and partly through the far more spectacular and impressive nature of both the surgeon's and the specialist's work. Compared with the operative or special treatment, both of which involve the use of instruments and apparatus that are new to the patient and therefore impress him deeply, the work of the general practitioner is quiet and unassuming. His constant, unremitting care, the responsibility which he bears without complaint, his readiness to respond to all calls, at any hour of day or night, are not taken into consideration, and people as a rule do not realize that the management of severe cases of infectious diseases, for instance, require just as great knowledge, care and ability in their way as do major operations or special treatment. The consequence is that physicians' fees are absurdly insufficient and low, in comparison to the large fees often demanded and received by surgeons and specialists, and while the latter are usually paid promptly, the general practitioner is forced to wait for his money and is crowded into the background altogether.

The author's argument centers in the fact that the general practitioner is underpaid and that he is entitled to a more fair and just treatment and consideration both at the hands of surgeons and specialists and of the public. He claims that the general practitioner, especially the country physician, is usually capable and efficient in treating the conditions which confront him, and pleads for a readjustment of his, the general practitioner's, economic condition, because with such a readjustment, the practitioner would be enabled to attend to his work without being handicapped and harassed by financial worries and would be relieved of the temptation to accept secret commissions for referred cases, which, of course, must present a temptation to turn his cases over to the highest bidder.

It is also claimed that the physician who refers a case either to a surgeon or to a specialist is entitled to a just and commensurate remuneration, not only for services previously rendered and to be rendered after the patient is referred back to him, which often is not done but should always be done, but also for assuming the responsibility of advising operation or special treatment. He is entitled to indemnification for assuming this responsibility because he will surely be held responsible by his clients in case of failure, while in case of a favorable outcome he will not receive credit. Fees that are collected should take into consideration both the services of the physician in charge and of the surgeon or specialist, and the apportionment of the fees should not be made a secret of.

In the discussion the blame for existing conditions was by some speakers laid directly to the general practitioner himself, and scant sympathy was expressed for him. Other speakers declared that they did not hesitate in the least to divide fees or to ask for such a division, while still others declared themselves absolutely opposed to any fee division whatever. In closing the discussion, Dr. Achard pointed out that while the general practitioner was in a measure responsible for the unsatisfactory economic condition in which he finds himself, this is not the outcome of recent carelessness but his inheritance of centuries, the medical profession having always neglected the financial or business side of their calling to their own detriment. Dr. Achard insisted that the general practitioner should be aided

in his effort to establish himself in a more favorable financial position and he declared it as his opinion that surgeons and specialists were in duty bound to aid their brother practitioners in this endeavor.

DUTY OF COOPERATION BETWEEN SURGEON AND ROENTGENTHERAPIST IN MALIGNANT DISEASE*

NOBLE M. EBERHART, A.M., M.S., M.D.
CHICAGO

The question of the duty of cooperation between the surgeon and the Roentgen-therapist is one that depends primarily upon whether both of these agencies have been demonstrated of actual value in malignant growths, and whether there are certain advantages possessed by one, not shared by the other. If this be true, then it is the duty of the practitioner to see that the patient has the benefit of both measures. Another way of stating this would be to say that if the Roentgen ray can do nothing that cannot be done by surgery, then there is no call for it; if it can, then it is our duty to employ it.

In the first years following the discovery of the x -ray, there was a distinct antagonism existing between the surgeon and the Roentgentherapist, whenever the ray was used in the treatment of disease. In so far as the ray aided in diagnosis, it was approved, but further virtue in it was denied.

On the other hand, the majority of Roentgen operators were not, themselves, surgeons and were inclined to ignore the great value of surgery, and only gave the patient the benefit of the ray. Thus the surgeon felt that his field had been usurped by a method not yet demonstrated, and the breach between the two was a serious one, when as a matter of fact, each is so necessary to the other that there should be no controversy between them. Each has its special function to perform and each insures the effectiveness of the results of the other.

At this early period I was myself devoting my energies in a surgical direction, and advocated surgery first, last and all of the time in malignant growths. Later I became converted to a belief in the equal efficacy of the Roentgen-ray. Therefore, I feel qualified to discuss the subject of my paper from both the surgical and the x -ray standpoint.

For those who have never considered the comparative advantages of surgery and Roentgentherapy, I will quote a few statistics.¹

In the second surgical clinic of the University of Vienna, from 1877 to 1903, of 520 cases of cancer of the breast operated on, there was a permanent cure in only 12½ per cent.

In Von Brun's clinic, Tübingen, 236 cases of cancer were operated on with 16⅓ per cent of cures. These are representative figures showing average surgical results, and coinciding with those from a number of other sources.

Williams² reported on 107 cases of carcinoma treated with the Roentgen ray with seventy-two apparent cures. This was over 67 per cent., but one-half of them were superficial cases which give a highly favorable percentage of cures by several methods. Excluding these, the cures were nineteen out of fifty-three cases, or about 36 per cent.

When preparing the first edition of my x -ray book³ I collected all the statistics I could find on Roentgen-ray results. This embraced several hundred cases of all kinds, including recurrent and inoperable cases. Averaging all of these together gave nearly 30 per cent. of reported cures, which led me to state, as I wished to be conservative, that the ray could be expected to cure from 20 to 30 per cent. of cancer cases; a statement I still adhere to. In sarcoma, however, the percentage is much less, being only 8 to 10 per cent.

* Read at a meeting of the North Shore Branch of the Chicago Medical Society, Oct. 3, 1911.

1. Eberhart: Practical X-Ray Therapy, 2d ed., p. 172.

2. Williams: Jour. Am. Med. Assn., Feb. 22, 1908.

3. Practical X-Ray Therapy.

It will be noted from these figures that the comparison of operative and Roentgen methods gives slightly the advantage in percentage to the ray. The startling fact, however, is that the results from neither are sufficient to cause one to be puffed up over them.

However, each method is shown to be useful, and it now remains to consider their respective advantages and disadvantages in order to see the need of their joint use.

The great point in favor of operation is the fact that one may at once remove a large growth that it possibly would take months to destroy with the ray; but here its advantage ceases; for the statistics given show that it is finally ineffectual in four out of five cases, the reason being that no surgeon knows when he has removed all of the diseased tissues. He does a thoroughly conscientious operation, removing everything apparently involved "and then some," but in spite of this more than 80 per cent. recur.

Here is where the Roentgen ray is superior. It has the power of penetrating the tissues and destroying malignant cells that have been left by the surgeon either on account of being overlooked or because their location made their complete removal impossible.

Thus it would appear that with a moderate number of cells or with those located in vital areas, the advantage is with the x-ray, while with larger and accessible growths, it is with surgical methods, but in the latter, the necessity of following up the operation with the ray, in order to prevent recurrence, should be obvious to anyone who will give the matter careful thought. I trust the time is coming when the operator will be considered negligent who does not insure his results by this method.

Furthermore, if there is any time in the course of a growth when the amount of malignant tissue present is the least possible, it certainly is immediately following operation, thus further favoring its complete destruction by means of the ray, and if the operative measure has really removed all of the growth there is still no harm resulting from the judicious use of the ray.

While we are insisting that the surgeon should follow his work with the ray, we must be equally insistent in advocating the immediate employment of surgical measures in those cases which are progressing rapidly, but are distinctly favorable for operation, instead of sticking to the ray alone.

There are many cases which offer a reasonable period during which to test the efficacy of Roentgen therapy and thereby do away with the need of operation, but if there is any serious doubt in the mind of the physician, I would favor operating first and raying afterwards.

There are also some instances that do not in my opinion justify any delay. Such, for instance, is the case in epithelioma of the lower lip. On account of the rapidity with which it spreads downwards through the glands, and thus becomes distinctly unfavorable for successful surgical interference, I always advocate immediate operation.

With the same disease affecting the upper lip, there is ordinarily plenty of time for a thorough test of the ray, and operation is only necessary in about 20 per cent. of the cases.

In conclusion, therefore, I repeat that it is the duty of the surgeon and Roentgentherapist to cooperate in all cases of malignancy, because it is their duty to afford the patient every reasonable chance for his or her life. Operation alone is a duty half performed. The ray alone often sacrifices the patient's surgical chances without being in itself sufficient. Used together a much higher percentage may be expected than is possible with either alone. One is the complement of the other. Our duty is plain!

905 Chicago Savings Bank Building.

Regular Meeting, Nov. 1, 1911

The president, Dr. J. M. Patton, in the Chair. In a symposium on intussusception, Dr. Frank X. Walls presented "The Symptoms and Diagnosis of Intussuscep-

tion in Childhood," and Dr. H. M. Richter presented "The Treatment." Dr. V. L. Schragar read a paper on "Clinical Aspects of Syphilis of the Liver,"

STENOSIS OF PYLORUS

Dr. Frank X. Walls: This child, two months old, weighed seven pounds at birth, and was perfectly well until two weeks ago, when it began to vomit its food. The vomiting became more and more pronounced. The baby gained about a pound in weight in seven weeks, but during the past week its weight has remained stationary. Changing the food had no effect on vomiting. There is marked constipation, the baby having had only one bowel movement in four days, and then only after an enema. In addition to the evident gastric peristalsis there is palpably a definite oblong-shaped mass toward the right of the median line, midway between the umbilicus and the ensiform. Sometimes it is more distinct than at other times. I think it is a case of hypertrophic stenosis, which should be treated surgically.

DISCUSSION ON THE PAPER OF DR. WALLS

Dr. James F. Churchill: I have some specimens taken from dogs on which we performed some experiments recently with regard to the cause of intussusception. The usual classification of intussusception is into the enteric type, which occurs solely in the small bowel; the colic type, which occurs in the large bowel, especially the sigmoid or rectum; the enterocolic, in which the small bowel passes through the ileocecal valve into the colon; and the ileocecal, in which the valve forms the apex of the intussusception. Then there is the appendicular type, in which the appendix forms the apex of the intussusception. This is later converted into the enterocolic type.

In carrying on my experiments, I had in view to obtain these specimens at an earlier stage than they can be seen in the human being. The resected specimens usually show only the late pathology. I wanted the early pathology, and we wanted to try various methods of producing intussusception. We used strong saline solutions, such as saturated solution of magnesium sulphate, in order to produce strong contraction of the bowel. We also sutured a heavy weight into the lumen of the bowel and we pinched the bowel, but these attempts were all unsuccessful. Several years ago Dr. Richter did some work on the dog and saw an intussusception occur spontaneously, but I have been unable to produce one in that way. The weight suspended in the bowel simulates a pedunculated tumor, but failed to produce an intussusception. Early in my work I discovered that we would meet with considerable difficulty, such as one does not encounter in the human, because the musculature of the dog's bowel is heavier in proportion to the size of the lumen than that in the human. I was unable to produce a colic intussusception and make it stay. I even introduced sutures and the intussusception would reduce itself while I was watching it, or on opening the abdomen again later I found the sutures had been torn out. I could not produce an appendicular intussusception because the lower end of the cecum in the dog is so thick and firmly bound down that it will not turn in.

The first specimen I obtained was a twenty-four hour enteric intussusception, the apex of the intussusception resting at the ileocecal valve. There is much hemorrhage in the mucosa, especially at the apex of the intussusception. The anemia of the entering layer is well shown.

The second specimen is an eighty-four hour enterocolic intussusception. The apex of the intussusception is very hemorrhagic and shows some necrosis.

The third specimen is a five-day enteric intussusception, the apex having just passed the ileocecal valve. The necrosis is well-marked, and there is a large amount of blood in the colon below the intussusception.

The fourth specimen is strictly an enteric intussusception, about twelve inches above the cecum, removed after eighteen hours. There is much hemorrhage. The interesting part of the specimen is that when I opened the abdomen the second time I found two intussusceptions, one the one I made, and the other a spon-

taneous one, about six inches above mine. It is not an agonal intussusception, because there is already evidence of hemorrhage at the apex and agglutination of the peritoneal surfaces. It was probably caused by my rough handling of the bowel.

The fifth specimen is one of enteric intussusception, illustrating the rolling up of the ensheathing layer by the entering layer.

The sixth is an agonal intussusception.

Dr. T. J. Sullivan: One man reported 144 cases in 1907, showing that intussusception may be very common. I have seen very few of these cases. One which I showed you last year presented all the symptoms described by Dr. Walls. The infant was 10 months old, a nursling, who became sick suddenly with an attack of severe pain, vomiting, pallor, blood and mucus in the stools. The attack certainly was characteristic, and ought to attract attention. If the diagnosis is made early, the mortality will be lower. In the series of 144 cases mentioned, the mortality was only 12 per cent. If the diagnosis is made on the first day, the mortality will be *nil*. Unfortunately, the symptoms are not described accurately in textbooks.

Another characteristic feature of the condition is that once the attack has passed, the patient has not a single symptom to indicate any disturbance. Inflation was said to have reduced the intussusception in fourteen of the 144 cases. Probably they were of the low type around the sigmoid. It is not so easy nor so safe to use inflation when the intussusception is higher up. Operation should be performed early, right after the diagnosis is made. The anesthesia should be complete, so that there will be thorough relaxation, for then the tumor usually can be felt. The incision must be made so that one can reach the mass easily. In 75 per cent. of the cases it is made through the rectus in the ileocecal region. Pass two fingers into the abdomen, seize the mass and deliver it gently. We can then reduce the intussusception without enlarging the incision. In my case a band passed from the appendix upward to the mesentery, drawing on the colon and ileocecal valve. The intussusception measured 2½ inches in length, and we were able to reduce it with gauze. The mortality should be low, especially because the operation can be performed very quickly.

Dr. J. W. Van Derslice: In regard to the etiology of these cases the age incidence bears an important relation. The great majority of these cases occur between the sixth and the twelfth month or in other words at the period of life when the first solid food is given and a careful inquiry will show that there has occurred an error in diet as a direct cause in many of the cases.

The symptom of pain is one which to my mind has been greatly over emphasized. This extreme pain so frequently spoken of occurs in hardly more than 50 per cent. of the cases; because of this over emphasis many cases are not diagnosed as early as they should be, this greatly affecting the prognosis, as the prognosis is good in direct ratio to the earliness of diagnosis.

The diagnosis is made upon the facies, i. e., that of an extreme illness. A palpable tumor is always present; this may at times be best felt by means of bimanual examination when the tumor may be felt between the finger in the rectum and the hand upon the abdomen much the same as the uterus is felt. The diagnosis should not be made if a palpable tumor is not found, as one is always present in these cases.

Dr. S. Kunz: About five years ago I had a case of intussusception in a child aged 8 years. The principal symptoms were a flaccid abdomen and a palpable tumor in the region of the splenic flexure. The child had her knees drawn up; she had the pallor, and I could feel the peristalsis. There was no severe pain. There was little bloody mucus, and the griping sensation passed quickly. I made a diagnosis of intussusception and operated within a few hours. The ileum and cecum with a long appendix had entered the colon. I caught hold of the ileum and examined it for adhesions, and it immediately began to slip out and had reduced itself in a very few minutes. There was a slight demarkation, but not enough to call for interference. I removed the appendix because of its great length.

When I was assisting Dr. Frank, we operated on many dogs, and every dog that died, died as the result of an intussusception. We were then working out Dr. Frank's bone bobbin for intestinal anastomosis. The dogs had griping, bloody, mucous stools, and they would arch up their backs. I do not believe that inflation or enemas are good treatment. Do a laparotomy and reduce the intussusception. The main thing is to make an early diagnosis.

Dr. J. M. Patton: I recently saw a case of ileocecal intussusception in a man, aged 34 years, where I had an excellent opportunity to study the character of the pain and the physical signs of the tumor. Occurring in a known subject of cholelithiasis, who had also had an appendectomy, the pain was entirely distinctive for this particular condition. The spasmodic character of the pain was well-marked, and the relaxation of the right rectus during the intervals of pain and the tightening up with the pain showed that it was a different matter from appendicitis. The pain is undoubtedly the most severe of any abdominal pain. It is distinctly localized. As the pain came on, I could feel the tumor more distinctly than when the pain was passing, and the abdominal wall was relaxed. There was no vomiting and there was no diarrhea in this case. The character of the pain and the tumor were very clear indications of what the trouble was. The patient declined operation. He was allowed to use high rectal flushings, and in twenty-four hours was relieved.

Dr. Walls (closing the discussion): I believe pain is a very prominent symptom in this disease and, as Dr. Sullivan so well brought out, the appearance of the patient is that of intense suffering. Pain is present not only in the majority of cases, but, according to most authorities, in nearly 100 per cent. In no other condition is pain so prominent a symptom, so severe, and occurring so early, so that in the diagnosis it is one of the most essential features. The pain is excruciating and then it is followed by a period of complete comfort, as the attack passes over, to recur in a short time.

DISCUSSION ON THE PAPER OF DR. SCHRAGER

Dr. J. L. Miller: I merely wish to emphasize a few points. These cases simulate gall-stones, and often it is impossible to make a differentiation. Several years ago I saw two cases operated on the same day in the same hospital for gall-stones. They both had syphilis of the liver. No stones were found.

In the group of cases in which there is fever, there is difficulty in differentiating between typhoid, tuberculosis or endocarditis. The fever curve of some of these patients also closely resembled malaria, going up every day or every second day, with a normal temperature during the interval. I have seen two cases with a leukopenia of 4,000, but have never seen a case with more than twelve or fifteen thousand leukocytes.

Regarding the length of time the treatment must be carried out: Sometimes under specific treatment the temperature may disappear within a week or ten days, but this is not always true. About two years ago I saw a case at the Cook County Hospital, diagnosed as syphilis of the liver. The patient received mixed treatment for five weeks, but there was no change in temperature or in the hepatic condition. The treatment was stopped on the supposition that the case was one of carcinoma. The autopsy showed that the man did have syphilis of the liver. The nodules were gummata, but the condition had not been affected by the mixed treatment.

Dr. Karl Koessler: The diagnosis is one of the most difficult problems. Of course, there is the Wassermann test, but Dr. Schrager has little faith in it. The trouble is that the test is usually made by men who have no training. When made by men who are competent to make it, the results are entirely different.

We must divide these cases into those which have jaundice and those which have not. This division is justified by the making of the Wassermann test. In cases of jaundice a positive Wassermann is obtained in about 80 per cent. of all cases. It is not enough emphasized that the Wassermann technic, as originally described by Wassermann, must be followed absolutely. If there is no jaundice,

with a positive Wassermann, it will speak in favor of syphilis. If we have a jaundice case, the first thing to determine is the strength of the jaundice serum which does not inhibit hemolysis. Every jaundice serum inhibits hemolysis unless you add syphilitic antigen. You must first find out which quantity does not inhibit this.

Another important point in the diagnosis which, unfortunately, cannot be brought out sufficiently well at the present time, is to establish the function of the liver in these cases. Where we have an insufficiency of the liver, which may be due to cirrhosis or syphilis, but not to carcinoma or cholelithiasis, these two conditions can be ruled out by the polymorphous function of the liver, but it is impossible to get a test to prove the insufficiency of the liver. We have the test for urobilinuria, for alimentary levulosuria and galactosuria. If two tests are positive, we can say it is a case of syphilis of the liver and not carcinoma or cholelithiasis, and we must only distinguish between the last two, which is difficult.

Dr. R. B. Preble: There is a possibility of having carcinoma in a syphilitic individual. I saw a man who presented himself because for a number of months he had been undergoing a gradual deterioration, losing strength and becoming anemic, without obvious explanation. His doctor found an enlargement of the liver. When I examined him I found an aortitis with aortic insufficiency, and a well-developed tabes. The liver was moderately enlarged, not evenly, but a lobulated liver. In view of the two phenomena which were obviously syphilitic, it seemed highly probable that the nodular masses in the liver were gummata. However, when antisymphilitic treatment failed to produce an effect for the better, and the man continued in his downward course, we gave up the idea of syphilis and regarded the case as one of carcinoma, probably secondary to carcinoma of the stomach, one of those cases which fails to cause any disturbance. So that one must not forget the possibility of syphilitic carcinoma with secondary deposits in the liver.

Another patient whom I saw years ago in the County Hospital I had seen several months before in the dispensary. At that time he had a lobulated nodular liver which, in view of his general condition and the definite history and evidence of syphilis, was thought to be a syphilis of the liver. Some months later I saw him at the County Hospital, and he told me he had a neoplasm of the liver, for which he was to be operated on the next day. I saw his surgeon and gave him the man's history, as I had had it, and told him that, in my opinion, it would be wiser to institute vigorous antisymphilitic treatment before opening the abdomen. However, he was not controlled by my advice, operated, and found a gumma in the liver.

The diagnosis is extremely difficult, but, as a matter of routine, it is wise in every case of disease of the liver which does not fit readily into some type, to see what can be accomplished by the vigorous use of mercury and iodids.

Dr. Schrager (closing the discussion): In making a diagnosis we naturally grasp the most striking symptoms. We may have in mind all the finer tests, but when a patient presents a striking picture which seems to be characteristic of a certain condition, we make the diagnosis accordingly.

With reference to the Wassermann test, I have not had much experience with it, but I have had more trouble since its introduction than I had before. We have had three or four cases in the last year in which the test was made by the very best men in town, and their reports did not agree. One would say 3 plus, and the other would give us a negative, and of course the clinical diagnoses fluctuated on that account. Even though there are finer points of diagnosis, it is excusable for the average clinician to make a mistake.

BUREAU COUNTY

The thirty-sixth semi-annual meeting of the Bureau County Medical Society was held at the City Hall, Princeton, Ill., Thursday, Nov. 9, 1911, Dr. W. C. Griswold in the chair. Present: Drs. J. J. Moran, C. C. Scott, M. J. Coveny,

J. F. Lewis, Wm. Keller, A. H. Malm, C. C. Barrett, W. C. Griswold, A. E. Owens, M. H. Blackburn, T. Sprague, O. J. Flint and H. R. Carson. Visitors: Dr Charles Davison, Chicago; Dr. Findley, Galesburg; Drs. J. M. Kirk, H. M. Owens, Persis White, and Schroeder of Princeton.

The minutes of the preceding meeting were read and approved. The application of Dr. J. M. Kirk was presented and he was duly elected a member of the society.

The secretary and treasurer's report was as follows:

Balance on hand at the last meeting.....	\$ 79.89
Total receipts for 1911	33.00
Grand total	\$112.89

1911

ITEMIZED EXPENSES

August, postal cards	\$.15
September 12, postage stamps.....	.25
October 19, draft to E. W. Weis.....	\$79.00
October 23, envelopes	3.00
	<hr/> \$82.40
Balance	\$30.49

In the absence of the regular committee of censors, the president appointed A. E. Owens, H. M. Blackburn, and J. F. Lewis, who reported favorably on the application for membership of Dr. James M. Kirk, of Princeton, Illinois, and Dr. Kirk was duly elected a member of the society.

The society voted against the proposed Zurawski amendment to the constitution, and endorsed the proposed Black amendment thereto.

The election of officers followed, and J. F. Lewis of DePue, Illinois, was elected president for the following year; C. C. Barrett, of Princeton, first vice-president for the following year; O. J. Flint of Princeton, third vice-president, and H. R. Carson, of Princeton, secretary and treasurer.

Dr. A. E. Owens announced that the meeting of the North Central Medical Society would be held at Dixon, Illinois, Dec. 5 and 6, 1911; and urged as many members to be present as possible.

Papers were read by Dr. J. J. Moran, of Spring Valley, on "Cesarean Section. Its Indications and Contraindications," by Dr. Charles Davison, of Chicago, on "Physical Diagnosis of Abdominal Tumors," and by Dr. T. Sprague of Sheffield, Ill., on his "Observations on Cancer."

CESAREAN SECTION

CHARLES DAVISON, M.D., CHICAGO

(Abstract)

Indications: contracted pelvis, when the conjugate vera is less than 7 centimeters; eclampsia with non-dilatation of the os; placenta prævia centralis; tumors obstructing the outlet; vaginal atresia; hydrocephalus or any condition or any disproportion between the size of the child and the diameters of the outlet which makes the birth of the living child impossible. The elected time for the operation is the beginning of labor. If possible, the operation should be performed at a hospital. In preparing the patient, the doctor proceeds in the same way as he usually does for an abdominal operation, viz.: painting the abdominal wall with a tincture of iodine without, usually, the preceding use of water, soap, alcohol, etc. For anesthetic, ether is recommended. An incision about six inches long, three inches above and extending three inches below the umbilicus, is made, extending to the left and about three inches below the umbilicus. The womb is not brought outside the abdominal wall, but surrounded with large hot packs. Incision is made down the anterior wall of the womb going quickly through the placenta if attached anteriorly. Grasp the foot or arm, remove the child and hand

to assistant who ligates the cut cord while the placenta is scooped out, at the same time with his other hand keeping firm pressure on the fundus of the womb. Then sew with thirty day chromicized catgut with sutures one-half inch apart and with a few superficial sutures; then repair the peritoneum as in ordinary laparotomy. The whole procedure should not take more than forty-five minutes.

After some discussion, Dr. Moran closed by saying that he had not found it necessary to use any constriction whatsoever as hemorrhage had been very slight and much less loss of blood than in an ordinary confinement. He also said he had seen no necessity for raising the womb up out of the abdominal cavity and thought it better not to do so.

PHYSICAL DIAGNOSIS OF ABDOMINAL TUMORS

CHARLES DAVISON, M.D., CHICAGO

(Abstract)

In diagnosing abdominal tumors, it is important that the colon should be used as an important landmark; its mesocolon is attached directly beneath and on inflating the colon, it rises up immediately under the abdominal wall. To inflate a small catheter may be used and an atomizer. Any tumor, for a time at least, moves in an arc from its center of attachment. Organs attached to the diaphragm move up and down with respiration. Fibroid tumors are usually found inside of the line of the colon, dull on percussion, solid and no fluctuation; are connected to the uterus and have no independent mobility from the uterus. Ovarian cysts, if multilocular, are nodular and fluctuating with thrills; if monolocular, they are smooth, single and simply fluctuate. Ovarian cysts have attachment to the broad ligament and have independent mobility from the uterus. Occasionally with cystic degeneration of the fibroid the tumor is fluctuating, but without independent mobility from the uterus. Sarcoma of the ovary develops rapidly, is malignant and therefore usually there will be ascites; it is dull on percussion and solid. Tumors of the omentum may or may not be inside the lines of the colon. Tumors of the colon itself are usually inside or in the line of the colon and will become larger as filled up with gas and may cause a constriction of the colon. With the aid of the stethoscope the passage of gas through the constricted point may be detected. Tumors of the mesocolon will usually disappear on the inflation of the colon with gas. Tumors of the spleen and kidneys: An enlarged spleen may be felt as a tumor in front of the colon and usually carries the natural shape of the spleen. Tumors of the kidney will be found behind the colon, and if the colon is inflated, the kidney will disappear or at least the colon will be in front of it.

Hydronephrosis is a fluctuating tumor, varies in size at different times, and is always behind the colon. Pyonephrosis occupies the same region behind the colon; blood and pus are found in the bladder. It is inflammatory in nature and therefore will have a leukocytosis, which is not present in hydronephrosis. Stones can usually be diagnosed by the x-ray. With solid tumors of the kidney, malignant or semi-malignant, there is no leukocytosis except in rapid growing sarcomas. These tumors above are transverse and move up and down with respiration. For dilating the stomach, use Seidlitz powder. Tumors of the pylorus move up and down with respiration; after dilatation they move down and up to the right and under the abdominal wall. Tumors of the cardiac end are hard to diagnose. Tumors of the body of the stomach after the inflation of the posterior wall, disappear; while those of the anterior wall are more prominent. Tumors of the gall-bladder move up and down with respiration, are pear-shaped and do not move down or to the right on inflation of the stomach. Tumors of the pancreas are fixed tumors and do not move up and down with respiration, are not changed by inflations of the colon; they are above the inflated colon and below the inflated stomach. May be solid or cystic; if latter, fluctuate. The color of the stools is not due to color pigment of the bile, as that is absorbable, but is due to an element formed by the combination of gall-bladder and pancreatic pigments, which is insoluble. The pancreatic fluid breaks up fat; if the pancreatic fluid is shut off,

we get fatty droplets and fatty acids in the stools; if pancreatic fluids drop off and if patient is fed fat, it will nearly all go through unchanged. Cysts of the body of the pancreas are usually round tumors, not usually fluctuating, are above the colon, below the stomach and do not move with respiration.

Dr. A. E. Owens moved a vote of thanks be tendered Dr. Davison for his paper: and that he be made an honorary member of the society; the motion carried.

CANCER

Dr. T. Sprague of Sheffield, gave his observations on cancer, in which he recalled many patients who had delayed operation and wasted precious time in attempting cures by "quack" and "cancer specialists." He said he believed those who used the "quack remedies" and cancer "specialists" suffered more pain than those who had been operated on, or those who had nothing done at all. He ended his remarks with a plea that something be done to discourage the resorting to "fake" remedies and educating people to the advantages of early operation in cases of cancer.

Inasmuch as Dr. Rummell of Depue, Illinois, was not present to read his paper on "Small-pox," Dr. Coveny was asked to give a short talk. Among other things, he said: He believed small-pox, as a disease, was growing milder as it grew older. The epidemic of 1902 was the worst he had experienced. In that epidemic, in which a boy's school was very generally exposed, the value of vaccination was clearly shown among the boys, inasmuch as many of the children had the disease, but all who had it had never been vaccinated; while all those who had been vaccinated, escaped. He stated that the Supreme Court had recently modified the law concerning the power of the school board to enforce vaccination; that while formerly a high school board could keep out of school any children who had not been vaccinated, they cannot now do so. The only way they can be prevented from attending school when not vaccinated is by city ordinance, which can compel those attending school to be vaccinated only when an epidemic is present. On motion, the meeting adjourned.

O. J. FLINT, Secretary and Treasurer.

FULTON COUNTY.

The fifty-eighth meeting of the Fulton County Medical Society, held in the Churchill House Dec. 5, 1911, was called to order by President Murphy at 1 o'clock p. m. The minutes of the October meeting were read and adopted. Dr. Black of Table Grove was granted a withdrawal certificate. Necrologist Stoops reported the death of Dr. John H. Breeden Oct. 25, 1911, aged 76 years.

Coleman and Strode moved the adoption of the report. Carried.

Dr. J. J. Bacon of Macomb gave a demonstration of a new instrument for intestinal approximation. On motion of Drs. Stoops and Coleman a unanimous vote of thanks was given Dr. Bacon. Dr. Strode gave several instances of personal experiences.

Those present were: Dr. Bacon of Macomb, Black, Standard, Strode, Coleman, Regan, Miller, Stoops, Ray, Johnston, Murphy, Kirby, Parks Allison, Beatty, Cluts, Shallenberger, Nelson, Adams and Scholes.

GREENE COUNTY.

The annual meeting of the Greene County Medical Society was held at Roodhouse Friday, Dec. 8, 1911, at 11:30 a. m.

The following were present: Drs. L. J. Hensler, J. W. Adams, J. J. Ehresman, Howard Burns, James Squires, Carrollton; C. R. Thomas, H. W. Smith, Roodhouse; F. N. McLaren, G. W. Burns, L. O. Frech, and H. A. Chapin, White Hall. In the absence of the president and vice-president, Dr. Squires was chosen chairman pro tem. Drs. McLaren and Adams were appointed censors pro tem.

Application of Dr. Garrison of Hillview was presented by Dr. Adams and referred to the board of censors who reported favorably, and on motion, the secretary was ordered to cast the ballot for Dr. Garrison for membership.

This being the annual meeting the election of officers was next in order and the following were declared elected: F. H. Russell, president; L. O. Frech, first vice-president; E. E. Joutt, second vice-president; and H. A. Chapin, secretary and treasurer; Drs. Howard Burns, C. R. Thomas and F. N. McLaren, censors. Dr. Howard Burns brought up the matter of the ethics of consultation of regular practitioners with osteopaths and that same was declared to be unethical and contrary to the rules of the Greene County Medical Society.

Dr. Frech read an interesting and well prepared paper on the "Diagnostic Import of Pain," which brought forth favorable discussion by all present.

The meeting adjourned for dinner and was called to order at 2:00 p. m.

Dr. McLaren read a paper on "Suggestion as an Adjunct to Therapeutics." The paper was well written and brought forth spirited discussion.

The Censors reported Carrollton as the next place of meeting with H. W. Chapman, W. C. Day, H. W. Smith, C. B. Foreman, and J. A. Cravene, essayists. After which the meeting adjourned.

MADISON COUNTY

The Madison County Medical Society met at Alton December 1, with President Dr. W. H. C. Smith in the chair. Owing to the absence of the secretary, Dr. E. W. Fiegenbaum, who was visiting the Randolph County Medical Society, Dr. R. S. Barnsback was elected secretary pro tem.

Present: Drs. Cook, Ferguson, Tulley, W. H. Grayson, W. F. Grayson, J. H. Fiegenbaum, Schreifels, Gwynn, Niedringhaus, Wedig, Yerkes, Taphorn, Pfeifferberger, Binney, Beard, Hastings, Halliburton, Burroughs, Theodoroff, and Barnsback.

Dr. W. R. Mangum was received by transfer from the Massac County Medical Society. Dr. Pfeifferberger made a short report about the recent organization of a County Society for the Prevention of Tuberculosis, whereupon the society heartily endorsed the Red Cross movement and ordered the secretary to procure 250 Red Cross Seals for use on his official mail.

Dr. W. H. C. Smith made a most earnest plea that this society go on record as favoring the establishment of a State Colony for Epileptics and that the members of this society urge our representatives to vote in favor of the appropriation. Dr. Halliburton moved that such action be taken by the society, and that the secretary be instructed to send a copy of this motion to the Governor, Senators, Representatives and the Committee on Appropriation. After the reading of the report of the secretary and treasurer the annual election of officers took place which resulted as follows: President, E. C. Ferguson, of Edwardsville; vice-president, W. H. Grayson, of Granite City; secretary, E. W. Fiegenbaum, of Edwardsville; treasurer, J. H. Fiegenbaum, of Alton; member of board of censors for three years; L. G. Burroughs, of Collinsville; member medico-legal committee, E. A. Cook, of Alton. Unanimously carried that we offer a vote of thanks to the retiring president and all other officers. A special vote of thanks was offered to Dr. Fiegenbaum for publishing "The Madison County Doctor" and that we order the publication continued as it has proven to be a good drawing card for our society. Drs. Tulley and Beard, as a committee, then conducted president-elect Dr. E. C. Ferguson to the chair, who expressed his appreciation of the high honor conferred and pledged his very best efforts for the success of the society.

Dr. E. A. Cook, of Alton, read a most excellent paper on "Why Lack of Interest in Obstetrics?" It contained a vast fund of information and clearly pointed out the fact that the average practitioner does not give this important practice the care and attention it so richly deserves. He further emphasized the fact that many of the ills and defects that so commonly follow childbirth could be prevented if the medical attendant would give this practice the study and care

that he gives to other departments of his work. The paper was thoroughly discussed, highly appreciated, and ordered printed. On motion of Dr. Tulley it was ordered that the secretary pro tem. send our secretary, Dr. Fiegenbaum, at Chester a telegram, congratulating him on his sixth election to his office. On motion adjourned to meet on the first Friday in January, 1912.

R. S. BARNSBACK, Secretary pro tem.

M'LEAN COUNTY

The McLean County Medical Society met in regular session at St. Joseph's Hospital, Bloomington, Nov. 2, 1911, at 1 p. m. Dr. L. P. Cavins, Bloomington, and Dr. E. V. Rice, Chenoa, were elected to membership in the society. Action was taken on the death of Dr. Lee Smith, and the daughter of Dr. Chapman. The society then went into joint session with Brainard District Medical Society and thirty doctors witnessed the following clinic:

Dr. E. A. Behrendt, herniotomy.

Dr. E. P. Sloan, shortening of utero-pelvic lateral ligaments, and trachelorrhaphy and perineorrhaphy.

Dr. Thomas W. Bath, appendectomy, and gall-bladder drainage.

Dr. E. P. Sloan, hysterectomy and shortening of the utero-pelvic lateral ligaments.

Dr. E. A. Behrendt, wiring of ununited fracture of tibia, lower third.

Dr. George Small, exhibited a case of pseudo-leukemia.

Dr. R. L. Eldredge, paper ordered printed in bulletin.

The meeting of the McLean County Medical Society held in Bloomington, Dec. 7, 1911, was a veritable feast social, physical and intellectual. Dr. Wm. W. Quine of Chicago was the guest of honor. After forty members did justice to an elegant banquet such as can be served only by the Woman's Exchange of our city, Dr. Quine addressed us on "The Religion for a Doctor." The doctor's address dwelt strongly on the religion as taught and exemplified in the life of Christ as a hope of eternal salvation, rather than to depend on certain beliefs as taught to be essential by Paul. The doctor emphasized our duty to give to the poor, not Christ's poor alone but perhaps even more to the devil's poor, as they seem to need it more. The doctrine taught was wholesome and surely comforting to the busy doctor who has little time for so-called religious work as taught in our churches to-day, but much time for true charity with no thought of reward in this world. The address was well received by all present.

MERCER COUNTY.

The Mercer County Medical Society convened in the Court House, Aledo, Ill., October 24 at 11:15 a. m., with Dr. B. A. Winbigler, ex-president, in the chair. After the regular order of business was transacted, the resolution of the American Medical Association was read, discussed and vote taken, that resulted in said resolution being laid on the table. An adjournment was made until 1:30 p. m., sharp.

The afternoon session opened with Vice-President Mathew O'Haver of Millersburg presiding. The scientific program was opened by Dr. Frank Eyre of North Henderson, who made an able address on our "Mistakes and How to Avoid them."

Councilor J. F. Percy of Galesburg, fourth district, was introduced and gave his address on "Some of the Present Day Problems of the Medical Profession in Illinois." His past experience in the Council of our State Society has placed him in position to give us valuable information, which he has emphatically given us in the last report on Councilors. The various discussions of his address proves to us that something is radically wrong. The optimism of our Councilor has made it apparent that the address is in part a few years ahead of time, but that facts were presented plainly was shown by the improvement already started in state

affairs. Although we do not approve of some statements in said address, is that good reason why we should denounce them? I think not. We as a profession must interest ourselves more in state affairs, and see to it that such laws are placed on the statutes of this great commonwealth, as will benefit the citizens of our state. Then and only then will our profession attain the standing it once had.

"An Important Clinic," by Dr. Frederick A. Besley, of Chicago (aided by some of our local physicians, who brought several cases of obscure character), manifested itself from the first as beneficial to all present because of the general hum and buzz, reminding us of the clinic room at college when important demonstration was made to the class. All present reported the wish for a similar, which is forthcoming in May.

Dr. C. A. Finley, of Galesburg, was present, who addressed us on "Quinin and Urea Hydro-Chlorid as a Local Anesthetic."

Our meeting was closed by the exhibition of valuable x-ray plates illustrating the location of the nasal and carpal bones. A unanimous vote of thanks was made Drs. Besley, Finley and Percy.

Members present were: Drs. Matthew O'Haver, V. A. McClanahan, Walter Miles, C. J. Johnson, H. S. Walker, I. M. Wallace, E. E. Morgan, M. H. Smith, A. N. Mackey, B. R. Winbigler, G. H. Moore, A. B. Childs. Non-Members: S. W. Wright, A. P. Willitts, Frank Eyre. Visiting Physicians: Drs. Frederic A. Besley, Chicago; J. F. Percy, C. A. Finley and W. O. Bradley, Galesburg; C. R. Unkrich, Monmouth; C. C. Johnson, Reynolds; L. C. Moore, Reynolds.

OGLE COUNTY

The Ogle County Medical Society met in regular session in the Public Library Rooms, Polo, Oct. 18, 1911. President Houston called the meeting to order promptly at 1:30 p. m. Minutes of the preceding meeting were read by the secretary and approved. Roll-call found the following members present: Drs. Akins, Beard, Beveridge, Brigham, Griffin, Houston, Kretsinger and Overfield. Visiting members present: Dr. William Hessert and wife, Chicago; Dr. Wm. Buckley Peck, Freeport; Dr. Charles W. McPherson, Hazelhurst; Dr. D. Overholser, Milledgeville and Dr. Charles A. E. LaSage and Edwin S. Murphy of Dixon.

Dr. William Hessert, Chicago, read a paper on "Fractures about the Elbow and their Treatment." This paper was illustrated with charts, and practical points demonstrated on the skeleton and was presented to the society in a clear instructive practical style. The doctor gave particular emphasis to his methods of reduction and treatment. He prefers hyperflexion on all cases of fractures above the elbow. Hyperflexion is secured by dressing either with adhesive straps or by the use of roller bandages, never use early forcible movements; wait until the third and fourth week when union is firm and then use mild passive motion.

Dr. Edwin S. Murphy of Dixon, presented an interesting paper on "A Few Practical Points on the Management of Simple Fractures." The Doctor demonstrated on the human body his simple inexpensive practical brace and splints, covering fractures from the hip to the ankle.

Dr. Charles A. E. LaSage, of Dixon, read a paper on "Injuries of the Eye-Ball." The Doctor took up in a practical way the simple non-surgical way of treating injuries of the ball. In removing cinders, dirt, small pieces of steel not entering the ball, use cocaine, make a cotton swab and remove foreign substance gently from the eye; to relieve inflammation use cold application.

Dr. Wm. Buckley Peck of Freeport, gave a friendly little talk and closed by cordially inviting the members of our society to visit the Stephenson County medical meeting.

Dr. S. D. Houston, our president, responded in a neat little speech. The name of Dr. W. W. Overfield of Forreston was presented to the society for membership and he was unanimously elected as a member.

Owing to our next meeting coming in February when the roads are bad and it being the time of the year when physicians are busy, Dr. Beveridge moved that we defer our next regular meeting until April, 1912. Carried.

Dr. Beard moved that the society by rising vote express their gratitude to all visiting members present, and to those that favored us with such able papers. Carried unanimously. Adjourned to meet next April, 1912.

SANGAMON COUNTY

The Sangamon County Medical Society held its 12th annual banquet at the Leland Hotel, Springfield, Monday, Dec. 11, 1911. One hundred and five guests sat down in the Gold Room, and enjoyed the excellent menu. The guests were seated in groups of four, one visitor to three members of the local society. At the conclusion of the banquet the society adjourned to the ball-room where Dr. Albert J. Ochsner, of Chicago, gave an address on "Surgery of the Thyroid Gland," illustrated by stereopticon views. Dr. George F. Stericker, president of the society, presided. The committee having the arrangements in charge included President Stericker, Secretary Deichman, Drs. L. C. Taylor and G. N. Kreider. This was the most successful banquet ever held by the society.

PERRY COUNTY

The Perry County Medical Society met Dec. 14, 1911, in regular session and elected the following officers: Dr. M. Adles, president; Drs. H. W. Wolf, J. T. T. Leigh, J. S. Cleland, J. W. Smith, and T. A. Holman, vice-presidents; Dr. F. P. Gillis, secretary and treasurer; Dr. W. L. McCandles, Dr. E. J. Burch, and Dr. J. P. Marlow, board of censors; delegates to the State Medical Society, Dr. J. S. Cleland, Dr. J. S. Templeton, alternate.

The name of Dr. H. W. Wolfe was presented for membership and after favorable action by the board of censors he was admitted to membership.

Dr. McCandles presented a case of adenoids and hypertrophied tonsils for operation. One tonsil was removed under ether chlorid anesthesia. A case of tumor of the cranium was presented by Dr. McCandles for diagnosis which was discussed by the members present. The society then discussed the question of adopting the American Medical Society post-graduate course for county societies and decided to adopt the same and begin the course with the year 1912. The Society then adjourned to meet in Duquoin, Ill., Jan. 11, 1912.

VERMILION COUNTY

After about twenty-five of the physicians of Vermilion County, Ill., had partaken of a beefsteak supper at the Plaza Hotel, Danville, 6:30 to 7:45 p. m., Dec. 11, 1911, they were called to order in the city council chamber by President E. E. Clark.

After the minutes of previous meeting were read and approved, Dr. Albert R. Satterlee of Danville was elected to membership.

The applications of Drs. Geo. T. Cass, Harley J. Gunderson, Wm. Francis Gerety, of Danville, and E. Gordan C. Williams of Oakwood were read.

The annual report of the treasurer was then read. A motion was carried to accept the report. It was then decided to dispose of the proposed amendments to the State Medical Society's constitution, but it was soon learned that there were vast differences of opinions. This condition of affairs aroused the anxiety of those who were not familiar with the meaning of these proposed amendments.

After discussing the purpose of the amendments and what the prognosis would be, Dr. H. F. Becker suggested that they instruct their delegate to act upon his best opinion when the subject comes up in the house of delegates for final settlement. Dr. S. C. Glidden moved that we table the subject till the secretary com-

municates with Drs. Black and E. W. Weis, have them elucidate the subject so that we would know the cause for this change and take it up for disposal at the next regular meeting. Motion carried.

Dr. Glidden gave a report of the meeting of the American Surgical Congress held in Philadelphia in November.

This was a most interesting and instructive report. It was given in good terse Anglo-Saxon language. Dr. Fred C. Dickson read a humorous poem that created a good deal of merriment which showed it was well taken.

The following officers were elected: president, Dr. Lemuel B. Russell of Hoopes-ton; vice-president, Dr. Francis W. Barton of Danville; secretary and treasurer, Dr. Solomon Jones of Danville reelected; censor, Dr. Robert Clements to take Dr. H. B. Babcock's place; alternate delegate to state meeting, Dr. E. E. Clark of Danville. Members present, 25.

Book Notices

The C. V. Mosby Company, of St. Louis, has announced the publication of a book on Pellagra, to be ready by January 1, 1912. This book is being prepared by Dr. Stewart R. Roberts, of Atlanta, Ga., who has just returned from Italy, where he studied the disease in its natural habitat. While in Europe the doctor made extensive research regarding the etiology and treatment of Pellagra, and the data contained in the book will reflect the latest and best work that has been done in connection with this disease, making it a reliable guide to those seeking information on the subject.

THE FOURTH PHYSICIAN. By Montgomery B. Pickett. A Christmas story of a new and distinctive type. A. C. McClurg & Co., Chicago. \$1.00 net.

This story of 144 pages, handsomely bound and beautifully illustrated, is based on a play which won first prize over 1,100 others as submitted in a recent contest, and tells of the career of a Virginia Physician, described by the old family servant in negro dialect. It forms a beautiful gift book for a physician or any member of his family.

AMERICAN JOURNAL OF SURGERY. Special Western Number.

In furthering the plan of producing special issues of the American Journal of Surgery composed of contributions by surgeons residing within a certain geographical area, yet of international reputation, there will be issued in the early part of 1912 a Special Western Number of this magazine. Subjects and those to contribute: "The Operation of Gastroenterostomy," by William J. Mayo, Rochester, Minn. "The Surgery of Tendons," by John B. Murphy, Chicago, Ill. "Operative Treatment for Graves' Disease," by George W. Crile, Cleveland, Ohio. "Colonic Intoxication," by J. E. Binney, Kansas City, Mo. "Practical Points in the Surgical Treatment of Exophthalmic Goiter," by A. J. Ochsner, Chicago, Ill. "Treatment of Foreign Bodies in the Esophagus," by E. Fletcher Ingals, Chicago, Ill. "Brain Surgery Technique," by J. Rilus Eastman, Indianapolis, Ind. "Treatment of Abscesses and of the Neerotic Foci Resulting from the Use of Salvarsan," by A. Ravogli, Cincinnati, Ohio. "Treatment of Prostatic Obstruction," by E. O. Smith, Cincinnati, Ohio. Subject not announced. H. Tuholske, St. Louis, Mo. "Artificial Tendons and Ligaments in the Surgical Treatment of Paralysis," by Nathaniel Allison, St. Louis, Mo. "Uterine Cancer," by John C. Murphy, St. Louis, Mo. "Arthritis Deformans," by Leonard W. Ely, Denver, Colo. "Acute Angulation and Flexure of the Sigmoid as a Causative Factor in Epilepsy with Special Reference to Treatment," by W. H. Axtell, Bellingham, Wash. The character of contributions prepared by these well known surgeons are of such a nature as to make this number particularly interesting.

NEWS OF THE STATE

NEWS

—Dr. Andy Hall of Mt. Vernon was elected president of the Southern Illinois Medical Society, and Cairo was chosen as the next place of meeting.

—Dr. J. N. McCormack, national health lecturer, being unable to fill his engagement at Nashville, Ill., Secretary Fiegenbaum of Edwardsville was sent to take his place.

—A mass meeting which was attended by persons from all over Livingston County was held in the Seoville Tabernacle at Pontiac, November 23, for the purpose of planning war against tuberculosis. Dr. Minnick of New Jersey and Dr. Pettit of Ottawa were the chief speakers.

—The Madison County Society for the Prevention of Tuberculosis was organized November 24 at Alton, with Mayor J. C. Faulstich of Alton as president and Dr. J. B. Hastings of Alton secretary. An executive board composed of editors and doctors from all parts of the county was selected and are predicting beneficial results from this movement.

—The cornerstone of the new Douglas County Court house was laid at Tuscola, Ill., November 16, 1911, by Grand Master Delmar D. Darrah, a son of an ex-president of the Illinois State Medical Society. Among the articles placed in the box was a copy of the ILLINOIS MEDICAL JOURNAL for June, 1911, containing the historical article written by Dr. J. L. Reat, and giving the names and short descriptions of the physicians, pioneers in this county. Honorable L. Y. Sherman, president of the State Board of Administration, delivered an address on this occasion.

—A London physician, whose name we suppress, recently prescribed some suppositories for a patient, and had them sent home. Some days afterward, when he called on his patient to ascertain the effect of the medicine, the patient informed him that he could make nothing of these pills: they were too large to swallow, and when he tried to chew them they stuck to his teeth. Thereupon the doctor explained very particularly the manner in which the suppositories should be used. "No, thank you," was the reply: "when I take medicine I'll take it in the way the Almighty intended it should be taken."—*Bull. Am. Acad. of Med.*

—The *British Medical Journal* cites a legend found over the door of a wayside inn in Tyrol:

Alkohol ist der Menschen grösster Feind.

Aber in der Bibel steht's geschrieben:

Deine Feinde sollst du lieben.

This, it says, can be paralleled by the profane syllogism obtained by Lord John Russell from an old Spanish priest:

Qui bene bibet bene dormit,

Qui bene dormit non peccat,

Qui non peccat salvatus erit.

—*Exchange.*

PERSONAL

Dr. Leon H. Tombaugh, Waukegan, who was reported to be seriously ill, is improving.

Dr. E. W. Enos, Jerseyville, is ill at the home of his father, Dr. Wm. H. Enos, of Alton.

Dr. Chas. A. Zorger, Penfield, has recently purchased the Illinois Pharmacy at Bloomington, Ill.

Dr. Walter H. Waterson, Waukegan, treasurer of the Lake County Tuberculosis Institute, has resigned.

Dr. Morace L. Blatt announces the resumption of his practice at 31 North State street, Chicago. Practice limited to Pediatrics.

Dr. Wm. E. Quine, Chicago, has given \$200,000 in memory of his wife to be used in the erection of four schools for women in China.

Dr. Carl Bernhardt, Rock Island, was operated on at the Presbyterian Hospital, Chicago, December 11, and is reported to be making favorable progress.

REMOVALS

Dr. Hiram Jay Smith has removed from Elgin to Watertown.

Dr. George Markley has removed from Kingston to Belvidere.

Dr. F. W. Larrabee of Alton has removed to Portland Oregon.

Dr. C. P. McAdoo has removed from Bridgeport, Ill., to Bremen, Ohio.

Dr. Darwin Schott has removed from Troy to Buckley, Iroquois County.

Dr. C. E. Kelso has removed from Champaign to Fort Lauderdale, Florida.

Dr. C. R. Bates, Camp Point, has removed to 601 North Kedzie avenue, Chicago.

Dr. O. L. Thompson has removed from Ellsworth, Ill., to Eureka Springs, Arkansas.

Dr. R. R. Campbell has removed from 32 State street, Chicago, to Los Angeles, California, Hotel Leighton.

Dr. M. Arbuckle has opened offices at 314-315 Murphy building, East St. Louis; practice will be limited to diseases of the ear, nose and throat.

PUBLIC HEALTH

—The State Board of Health has notified the free antitoxin stations in Chicago that the appropriation of \$8,000 for antitoxin for cities of over 150,000 population has been exhausted and that no more will be available from the state before July 1, 1912. The Chicago Health Department has arranged for supplies so that no case of diphtheria need be neglected.

—A case to test the new law limiting the employment of women in public institutions to ten hours in a single day was decided adversely to Chicago by Judge William M. Gemmill of the Municipal Court, Dec. 12 last. The two cases decided related to a cook and nurse in the contagious disease hospital. A minimum fine of \$25 each was imposed on the city as the hours of work had already been rearranged to comply with the law.

—Dr. G. J. Schneider, president of the Elgin Physicians Club, sent a vigorous communication to the Elgin *Courier* demanding an increased appropriation by the commissioners for health purposes, pointing out the necessity for a laboratory for early diagnosis in diphtheria. He controverts the claim of the commissioners that the present appropriation is "as great as the finances will allow" by the statement that Elgin has no bonded debt and under the City and Village Act could legally raise \$1,350,000 by bond. It now takes from thirty-six to forty-eight hours to secure reports on cultures sent to the State Board of Health. The Physicians Club advocates the appointment of a medical man as health officer.

—JOHN BULL REPORTS ON ANTI-VACCINATION MEETING.—A back number of *John Bull* issued over a year ago contains the following amusing report of a meeting of the West Hornsley Anti-Vaccination Society:

An enthusiastic meeting of the above society was held last Friday. Mr. L. B—— in the chair. After a few introductory remarks by the chairman and a delightful rendering of hymn 1789 by Miss P—— (of America) the Rev. W—— P—— rose to make the speech of the evening.

The great antivaccinationist was in rare fettle. He said he was a religious man (Hear, hear); he had a religious objection to many things

(applause) ; in fact to most things which he disliked (renewed applause) ; above all, he had a religious objection to vaccination (great cheering). Were they to allow the medical profession to lord it over them? (No.) Were they to sit down and see their children's bodies mutilated? (No.) (No and cheers.) Were they to be like unchristian Jews? (No, no.) A thousand times no.

It was absurd to argue as some did, that vaccination lessened the risk of disease. Who were they to set their wills against that of the Almighty? Was not disease sent from on high with a purpose? (Applause.) Was it not sheer wanton audacity for mortal man to minimize the ravages of God's punishments? What was the good of sending punishment if they did that? (Applause and a voice, "None.") Were they to be atheists and make it as healthy and pleasant as possible for their fellow men? (No, no.) God sent small-pox with a purpose (cheers) to punish the offender (applause), the publicans (cheers and booing), the sinners, the Catholics (renewed cheers and booing), the Tory party generally. (Here the audience rose to their feet and cheered for five minutes.) This was not a political meeting (hear, hear) and he spoke with no political bias whatever (cheers), but the Radical party (loud cheering) always would stand for liberty (cheers), fraternity (cheers), equality (cheers), cheap food (cheers), and cheap coca (loud applause). That was why he called himself a religious man (hear, hear) and that was why he opposed compulsory vaccination (loud and continuous applause). A resolution on the usual lines was carried unanimously.

—The following judgments under the Food and Drugs Act have been recently published by the Secretary of Agriculture:

1170. Misbranding of Dr. Towns' Epilepsy Treatment. Misbranding was alleged for the reason that the above quoted statements from the label appearing on the carton and bottle, of the treatment, and in the circular and booklet packed with said bottles, are false and misleading, because they convey the impression that the treatment in question possesses therapeutic properties of high value in the treatment of epilepsy and diseases of the nervous system, when in fact, the agents of which said treatment is composed, taken singly or together, cannot be relied on for a cure of epilepsy or kindred diseases, any beneficial effect which the treatment might have being only temporary and palliative.

On May 2, 1911, the said corporation pleaded guilty, and was fined \$25.

1178. Misbranding of Dixie Fever and Pain Powder. Analysis by the Bureau of Chemistry of the United States Department of Agriculture of a sample of this product showed it to be a mixture of acetanilid, caffeine, sodium bicarbonate and charcoal. Misbranding was alleged for the reason that the following statements contained in the label are false and misleading and tend to deceive the purchaser because the ingredients in said drug do not possess therapeutic properties adequate to attain the results claimed by said statements, to wit: (1) "Useful in all cases of fever to lower temperature and relieve pain." (2) "A positive and imme-

diate relief for headache, neuralgia, catarrh, la grippe, cold in the head, rheumatism, sleeplessness, and all nervous conditions." (3) "It relieves all pains in the head, face and body, which are caused by cold, la grippe, neuralgia, exposure, or dissipation." (4) "If suffering from periodical attacks of the above troubles (headache, neuralgia, la grippe, cold in head, earache, toothache, pains over eyes, rheumatism), they will grow less frequent and less severe by using these powders." (5) "For insomnia or sleeplessness, one powder taken on going to bed will produce a natural and healthy sleep."

On Dec. 16, 1910, defendant pleaded guilty and was fined \$10 and costs, or a total of \$24.40, which sum was paid forthwith.

1179. Misbranding of Stello's Asthma Cure. An analysis by the Bureau of Chemistry of the United States Department of Agriculture of samples of this product showed it to be a liquid containing alcohol by volume 4.25 per cent., potassium iodid 2.36 per cent., glycerin about 22 per cent., a small quantity of tincture cannabis indica, and the balance water and undetermined matter. Misbranding was alleged for the reason that said product contained cannabis indica, the quantity or proportion of which was not stated on the label on the bottle, and alcohol, the quantity or proportion of which was not stated on any of the labels borne by said product.

On Sept. 6, 1911, the defendant pleaded guilty and was fined \$50.

1197. Misbranding of Williams' Russian Cough Drops. Analysis made by the Bureau of Chemistry of the United States Department of Agriculture of a sample of said product showed it to contain sucrose and invert sugar flavored with oil of anise. Misbranding was alleged for the reason that the statement on the label "Russian Cough Drops" purported the cough drops to be a foreign product, which statement was false and misleading, and for the further reason that the phrase "Sure to cure" appearing on the label was misleading in that the statement was calculated to induce purchasers to believe that the cough drops would cure coughs, colds, hoarseness and sore throats, when, as a matter of fact, they will not effect the cure of such ailments.

On Oct. 21, 1910, the case coming on for trial by a jury, a verdict of not guilty was rendered by the jury by direction of the court.

1182. Alleged misbranding of Hall's Catarrh Cure. Analysis by the Bureau of Chemistry of the United States Department of Agriculture of a sample of said drug showed it to be a liquid preparation containing 15.11 per cent. non-volatile material (total dissolved solids), including 10.81 per cent. potassium iodid, 3 per cent. invert sugar, a small amount of the extract of some bitter drug, probably gentian, and a slight amount of resinous material. The volatile portion included 13.8 per cent. alcohol by volume, cardamon and caraway in small quantity, and water. Misbranding was alleged for the reason that the statements appearing on the label and carton and in the pamphlet were false and misleading and calcu-

lated to deceive and mislead the purchaser because the said drug did not contain such ingredients or therapeutic properties capable of affording the relief or cure claimed therefor.

On March 31, 1911, the defendant appeared and filed a general demurrer to the information. On June 6, 1911, the said cause coming on for hearing on said demurrer, the court rendered an opinion in which it said, among other things, that "no charge is made that there is misbranding as to character and quantity of ingredients, but simply that a false deduction was made as to the therapeutic value of the remedy. The case presents no substantial difference from that of *U. S. v. O. A. Johnson*, decided by the Supreme Court of the United States on May 29, 1911, and it is plainly the duty of this court to consider that decision as an authority herein. The demurrer is, therefore, sustained, and the information dismissed."

MARRIAGES

WILLIAM C. MEACHAM, M.D., Oak Park, Ill., to Miss Irene Bate of Ottawa, Ont., Nov. 29.

JOHN W. ROBINSON, M.D., of New Berlin to Miss Gertrude Edna Peel of Springfield, Ill., recently.

HARRISON C. PUTMAN, M.D., Canton, Ill., to Miss Nellie A. Hanlon of San Antonio, Tex., October 18.

HENRY BARDWELL DONALDSON, M.D., Chicago Heights, Ill., to Miss Pearl Anderson of Chicago, Nov. 16.

VICTOR DARWIN THOMAS, M.D., Elliot, Ill., to Miss Edith Eunice Von Solen of St. Paul, Minn., recently.

DEATHS.

DR. REUBEN LUDLAM died November 20, 1911, at his home in Chicago.

ALPHONSE OULMAN, M.D., University of Vienna; died at his home in Chicago, October 10, from cerebral hemorrhage, aged 69.

DR. JOHN B. LOGAN, formerly of Carlinville but later of St. Louis, died in that city Nov. 29; the remains were brought to Carlinville for interment.

JEREMIAH J. SLATTERY, M.D., Bellevue Hospital Medical College, 1893; of Chicago; died in his office in that city, November 8, from organic heart disease, aged 40.

LARS P. JACOBSON, M.D., College of Physicians and Surgeons, Keokuk, Ia., 1898; died at his home in Kankakee, Ill., November 6, from heart disease, aged 57.

ELVER GARRISON, M.D., Barnes Medical College, St. Louis, 1896; a member of the Illinois State Medical Society; died at his home in Greenup, February 9, from cerebral hemorrhage.

JOHN D. OVERHOLSER, M.D., Rush Medical College, 1901; of Milledgeville, Ill., a member of the American Medical Association; died recently and was buried at Milledgeville, November 12.

ALEXANDER LANE, M.D., Rush Medical College, 1895; a well known colored practitioner of Chicago; once assistant physician of Cook County and a member of the legislature; died at his home in Chicago, November 13, from disease of the lungs, aged 52.

OSCAR H. MANN, M.D., Hahnemann Medical College, Chicago, 1856; last president of the village board, first mayor, and for forty-five years a resident of Evanston, Ill.; died at his summer home in Gobleville, Mich., October 24, from injuries received in a fall a few hours before, aged 77.

HUGH BLAKE WILLIAMS, M.D., Tulane University, New Orleans, 1884; a member of the American Medical Association; assistant surgeon to the eye department of the Illinois Charitable Eye and Ear Infirmary; died at his home in Chicago, December 4, from cerebral hemorrhage, aged 51.

WILLIAM J. MOORE, M.D., Rush Medical College, 1870; consulting physician to St. Elizabeth's Hospital, Danville, Ill., a veteran of the Civil War and one of the oldest practicing physicians of Danville, was found dead in his office November 6, from the effects of an overdose of chloroform, aged 65.

THE LUTE OF LIFE. A book of poems written by James Newton Matthews, M.D.

Edited by Walter Hurt. Published by Horton & Co., Cincinnati, O. Price \$1.50.

Some years ago we attended a meeting and banquet of the Effingham County Medical Society and had the pleasure of meeting Dr. Matthews and hearing him read a delightful poetical production from his own pen. On inquiry we learned that the doctor practiced in the obscure country town of Mason in Effingham County, where it seems he practiced medicine and dreamed poetry. How these functions were combined in a town of 400 inhabitants in Southern Illinois is beyond our comprehension, but they were.

Time went by and the doctor's poems increased in number, finish and beauty. His medical practice, we imagine, diminished in extent and remuneration for he was not a man to blow a blast on the horn of self-advertisement. On the contrary he was modest to a fault and when at last in the prime of his life he was cut down, all he left was a book of beautiful poems and a good name.

Time and space do not permit us to say more on this subject, but we urge our readers to send the money to Mrs. Matthews and secure delightful entertainment and do a charitable act beside.

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ORIGINAL ARTICLES

THE THERAPEUTIC APPLICATION OF SOLID CARBON DIOXID *

W. A. PUSEY, M.D.

CHICAGO

PRINCIPLE OF USE AND HISTOLOGIC CHANGES

The principle of the use of solid carbon dioxid is the production of a sharply circumscribed deep inflammatory reaction by the application of sudden cold. The temperature of solid carbon dioxid is $-80^{\circ}\text{C}.$, so that it freezes tissues instantly on application. It can readily be understood that in this freezing of living tissues there occurs an enormous disturbance of the tissue elements. The cells and the liquid elements — everything in the tissues — is converted into a solid frozen mass. One is prepared then to find on microscopic examination evidence of very extreme disintegration of the tissues. The epithelium, the fibrous tissue, the lining membrane of the blood-vessels, all show marked degenerative changes. The nuclei of the cells are for the most part broken up, the protoplasm stains poorly, the endothelium of the blood-vessels is similarly affected, the blood-vessels and lymph spaces are clogged with leukocytes. With this there is an intense engorgement of the surrounding vessels. In a word you have an extreme disintegrating process of a peculiar kind with a secondary inflammatory reaction.

FACTORS INFLUENCING THE EFFECT OF FREEZING

There are two factors that determine the amount of reaction from an application of solid carbon dioxid. One is the degree of pressure with which the freezing agent is applied. The other is the duration of the freezing. The essential point of difference between freezing with a spray of ethyl chlorid or liquid carbon dioxid and freezing with an intensely cold mass is the fact that with a solid mass you can freeze

* Read at a meeting of the West Side Branch of the Chicago Medical Society, Nov. 17, 1911.

under pressure so that you can freeze to a considerable depth. With the spray you only freeze superficially, so that the attempts to apply freezing with sprays therapeutically have failed in the results that have been gotten with solid carbon dioxid or liquid air. The more firmly you apply your carbon dioxid the deeper is the effect produced. In this way you can vary the amount of freezing of the tissue from the thickness of a sheet of paper to a quarter of an inch or more. This factor is very important in the application of the agent. The amount of pressure under which you apply carbon dioxid depends on the depth to which you wish to freeze and you have a pretty fair idea of what the depth should be by the thickness of your lesion. For example, if you have a lesion a thirty-second of an inch deep you can freeze to that depth. The controlling of this depth of freezing is in a way a matter of personal judgment which can only be obtained by experience.

The second factor, the duration of the freezing, is very easily controlled. You measure it in seconds and if you are to do the work well you should time your applications with a watch. I make applications all the way from five seconds to a minute or more; in tissues covered by a layer of horn from a minute and a half to two minutes. The effect varies according to the duration of the application. In an adult with an application of five or ten seconds you get an evanescent hyperemia or a slight dermatitis which scales off in a few days. With an application of twenty or thirty seconds you get a more intense dermatitis or a blister that disappears in a few days. One minute application in an adult produces a quick blister under which there is usually a superficial dry slough. In applications of a minute or more on myself I usually got a reaction with the formation of a dry eschar which was followed by a thin scar. With applications under thirty seconds there is rarely any scarring whatever. The scars that follow these applications, where they occur, are white, soft and pliable and this is one of the best features of the agent. No one has as yet, as far as I know, reported any hypertrophic scarring following these applications, and any destructive agent which is not followed by keloids and leaves pliable white scars has in that fact a very great advantage over ordinary escharotics.

Children in my experience show much more sensitive reactions to freezing than adults — which makes it advantageous to treat nevi in them as early as possible. I think the applications need to be only about one-third as long in a child as in an adult; that is, with an application for ten seconds you will get as much reaction as you will from thirty seconds in an adult. An allowance should always be made for this in making applications to children. Women with fair white skins also react more sensitively. In terminal areas of circulations, as the borders of the ear, the bridge of the nose, the extremities — particularly the legs — where the circulation is least perfect you get more active reactions. In the opposite way, where there is much horn on the surface the application must be greatly prolonged. A thick horny layer interferes strongly with the freezing. One interesting and rather curious hypersusceptibility is seen in surfaces formerly treated with *x*-rays. My first experience with this

fact was in an extensive nevus which had previously been treated with *x*-rays and in which I found that the reaction was more intense than in the youngest child. The reason is not far to seek. The cells of these areas treated to the point of producing atrophy with *x*-rays are already in an unstable condition. The capillaries have chronic endarteritis and when they are frozen disintegration of the cells and endarteritis is much more extreme than in normal tissue.

THERAPEUTIC INDICATIONS

The therapeutic indications for the use of freezing with carbon dioxide are three:

First, to produce a simple inflammatory reaction.

Second, to produce destruction of certain tissues by interstitial scar tissue formation.

Third, to produce immediate destruction of tissues by freezing.

The most useful application of the agent is not as an escharotic, that is to destroy tissue directly by freezing. Its usefulness lies chiefly in the fact that you can produce an interstitial sclerosis of the tissue, scar tissue formation, without destroying all of the tissues in the area treated. In this way, for example, you can get rid of the blood-vessels or the hair follicles of a nevus without destroying the more tolerant connective tissue stroma in which they are placed. In this respect the agent differs entirely from caustics.

The use of the agent simply to produce an inflammatory reaction is not extensive. It may be used to stimulate chronic circumscribed patches of eczema or lichen planus, but I do not think it has any advantage in these conditions over chemical stimulants. In lupus erythematosus it has proved very useful. I think there is unanimity of opinion that it is the most useful remedy that we have in that condition.

In the treatment of infections of the skin it does not have a very great field of usefulness. It does not kill bacteria. That was proved with liquid air. Bacteria can be frozen with liquid air, and kept at minus 160 C. without interference with their vitality. In lupus vulgaris it has value. Personally I have found it especially useful in isolated nodules of lupus vulgaris.

When you come to its use in destroying certain tissues in the skin it has a very much larger field. For the removal of isolated pigmented patches, in the treatment of senile freckles and senile keratoses, it is the most useful agent that we have. We can get rid of these lesions, without any interference with the texture or contour of the skin, by freezing them for ten to thirty seconds, the latter in the case of a keratosis.

The effort has been made to treat powder stains and tattoo marks but these are the result of a deposit of pigment, usually carbon, deep in the corium, and they cannot be removed without very considerable scarring.

Several men have reported good results in the treatment of hypertrophic scars and keloids. Personally I should expect keloids to return after this treatment.

For the removal of warts, which are lesions that are usually regarded as a joke, but that are no joke to get rid of, freezing acts well, but it has to be done very vigorously and usually repeated several times.

The most useful field for the agent is in the treatment of nevi, both pigmentary and vascular. Moles, which are small pigmented nevi, you can get rid of easily by freezing two or three times from half a minute to a minute. With pigmented nevi up to the size of a coin you can usually get practically perfect results. With large nevi the results are only relatively good, but better than by any other method of treatment. You can entirely get rid of the pigment, of the hair, and of the superfluous tissues and leave in their place a white pliable skin with slight scarring. The trouble is that the area is usually unduly white, for you cannot retain the pink and white tints of the natural skin, but the condition then is so much better than the nevus that the patients usually regard these defects in the result as trivial. In some of the large nevi, both pigmented and vascular, I have availed myself of *x*-rays to produce hypersensitiveness to freezing, with, I believe, considerable advantage.

With reference to the effect in vascular nevi the lesion may be divided into three classes. First, flat vascular nevi; second, small elevated nevi; third, large elevated nevi. In the flat nevi, port-wine marks, where there is simply a red discoloration of the skin, you cannot get as good results as in cases where there is an excess of tissue to work on. In these lesions up to the size of a coin in young children I have been able to get excellent results, but in the larger lesions, the results are not as good as can be gotten with radium or *x*-rays or with these combined with carbon dioxid. In small elevated nevi no matter how cavernous, one can usually get almost perfect results, especially when treating young children. With the large elevated nevi one can get results that comparatively are about like those in large pigmented nevi. You can enormously improve the condition, but you cannot get rid of every trace of the nevus. I have found no difficulty in working on these lesions in the lip where it is necessary to make the application on the mucous surface.

In senile keratoses, as I have said, one gets ideal results from these treatments and the same is true with small superficial rodent ulcers beginning under these keratoses, but with well-defined epitheliomas I do not regard the method as a method of preference. If, however, an epithelioma is superficial and it is frozen vigorously through its entire length it can be destroyed in this way and sometimes the agent offers a convenient method of treatment. In such cases the freezing should be carried out without regard to cosmetic effect; that is, it should be done under firm pressure and for one or two minutes.

PREPARATION OF CARBON DIOXID SNOW

When I first began to use carbon dioxid I collected it in a towel. Then I began to use a chamois skin and I have continued that method to the present. One needs a tank of liquid carbon dioxid. This is placed in a slanting position with the end containing the valve at the lowest point, so that the liquid and not the gas will be ejected when the valve

is opened. A chamois cloth is then put round the vent so that it forms a bag and the valve is opened and the carbon dioxid is allowed to collect for a few seconds in the bag. When the bag is removed a collection of snow, looking like firmly packed ordinary snow, will be found in it. This can be manipulated like ordinary snow. I take tubes of hard rubber or metal corresponding to the size of the lesion I am going to treat, put the snow into these and press it down until a stick of snow is formed. If one wants to treat a very small lesion he should have a hard pencil and by taking a small metal tube and an iron rod the snow can readily be pounded with a hammer into a mass of ice. In this way you get a solid stick of ice, which can be brought to a sharp point and with this you can treat the smallest lesion. I have found these simple devices more satisfactory than any of the special apparatus, in that you can do everything that is possible with them and you can make sticks of carbon dioxid of any size you desire.

DISCUSSION

Dr. Jos. Zeisler: I am very glad of the opportunity to publicly congratulate my old (but ever young) friend Dr. Pusey upon the accomplishment which he has demonstrated here before us. Dr. Pusey has been clever enough to exploit the value of the x -ray in such a way that he may be called the pioneer in the therapeutic application of the x -ray in this country.

He also may well be called the originator of the therapeutic application of refrigeration by means of carbon dioxid snow. It is easy enough for Juliusberger, afterward, in an otherwise interesting pamphlet, to claim priority. But he used carbon dioxid in the form of a spray, which is quite a different thing.

Dr. Pusey has, I believe, been far too modest from the start. His first reports would lead one to suppose that this was just a little plaything, something to keep about the office to remove a wart or a mole now and then. I think he will bear me out when I say that I was the first to urge a larger scope for the use of carbon dioxid snow.

I went much further than he did. I was bolder in my applications of it. By my demonstrations at the international congress in Budapest and through articles in German periodicals I have helped to introduce it to wide circles.

There is absolutely nothing to correct or criticise in what Dr. Pusey has said to-night. There are, perhaps, a few points that might be added. His attitude regarding its use in epithelioma is, to my mind, too conservative. One of my first applications of the method was in just such a case, and some of my very best results have been obtained in this important field. Perhaps the very boldness of my applications accounts for my success in a large measure.

The case of which I speak was a fairly well-known person and the epithelioma very extensive. The patient came in from out of town and it was impossible to arrange for a second application, hence my desire to do all that I could in one application. The tumor was upon the temple and about as large as a fifty cent piece. I froze for about a minute or a minute and a half. Within three weeks it had vanished.

I have had several experiences of that sort. Recently I had a case coming to me from San Francisco. The patient had been treated with the x -ray which resulted only in leaving an atrophic scar in places, without stopping the progress of the rodent ulcer. I froze extensively and very thoroughly (meaning by this both as to time and pressure) and within three weeks had the satisfaction that the treatment had entirely eradicated (at least for the present) the blemish without scar.

That is one thing which Dr. Pusey emphasized which will bear reemphasis—the freedom from scars. I do not believe I ever produced a noticeable scar.

The doctor mentioned keloids. I saw one such formation after using carbon dioxid, but I do not think it was due to anything I had done or left undone. I have found this: if a blister forms and then breaks and becomes infected, or if a dressing with a dusting powder and cotton is used and the cotton sticks, the results are not so good. In one accident of this sort I did observe a small keloid but, fortunately, it yielded to further freezing.

Recent Spanish journals speak very enthusiastically about carbon dioxid, especially in lupus erythematosus, and do me the honor to mention my name. Walker, in his book on skin diseases, considers carbon dioxid in lupus erythematosus almost as a specific. As to the case of angioma treated before us to-night, I should have frozen more thoroughly, in order to accomplish everything in one treatment. I may report to you one case in which this method has been more than a cosmetic measure, in which it was probably a life saver.

About a year ago a child aged 4 months was brought to our clinic at the Northwestern, whose tongue was a large, unwieldy mass of angioma-cavernosum. I treated it with a carbon dioxid crayon, using a firm, hard pointed stick of carbon dioxid ice. The child had eight or nine treatments, freezing the tongue in every direction. The result was paramount to a cure within three months.

As to the treatment of nevi, I have had but one case of sufficient magnitude to justify reporting it here. This occurred in a young lady who had a pigmented nevus upon her left breast of the size of a large palm. It was almost black and covered in parts with white hair. I treated it by repeated applications during the period of one year. The hair is now entirely gone, the pigment has disappeared and the condition at present is such that with the use of a little pink powder she can go décolleté into society without any embarrassment.

I do not believe that before the introduction of this snow we had any agent that could have been used in such conditions. The x-ray is too dangerous and any caustic would be almost certain to leave bad scars.

In regard to the technic, I dare say anyone who becomes at all interested in the subject works out his own technic. I have used one of the molding outfits, the one introduced by Goosman, a civil engineer who makes a specialty of carbon dioxid apparatus. It enables one to have a crayon the size of a finger and absolutely firm, and it can easily be pointed as sharp as a lead pencil. With it one can apply the snow to the smallest lesion.

In closing I wish to congratulate Dr. Pusey again and only hope that he will add to his two splendid achievements a third one. I do not know what it will be, or in what direction his genius will find an outlet, but I am sure it will come.

Dr. J. Frank Waugh: I am sure we have all enjoyed the demonstration given by Dr. Pusey this evening. When the profession at large, not only in the cities but throughout the country, realize how easily and how readily the snow can be made and at what a nominal figure it can be obtained, also what excellent results they can secure with it, I am sure we shall appreciate all the more the extent to which we are indebted to Dr. Pusey for what he has done in perfecting this method of treatment.

He has covered the ground so thoroughly that there is little more that can be said, except, perhaps, some special features that come up with all of us who have used the snow.

I am glad he impressed upon you the importance of exercising great care as to the pressure in regulating the amount of reaction you wish to secure, a matter that can only be acquired by experience, and only after repeated treatments will one be able to tell the amount of pressure to exert in each individual case.

The location of the lesion is of importance when treatment with carbon-dioxid snow is considered. If situated over a bony prominence, much less pressure is required and for a shorter duration than when the area to be treated is located over soft, pliable tissue. Especial care should be exercised in treating areas on the scalp and about the orbits. In these localities the reaction is much more severe, and as a rule the period of time for applying the snow should be about half that required for a similar lesion on another part of the body.

I agree with Dr. Pusey in the matter of giving one short treatment at first, to see how the patient reacts. Some patients show again as much reaction as others with the same amount of pressure, the same duration, and, apparently, the same kind of lesion. Then, again, a sensory nerve may be situated immediately beneath the area to be treated, which if frozen causes excruciating pain. I recall to mind a case of Dr. Ormsby's that emphasizes this point. The patient was a man who had lupus vulgaris, there being eighteen or twenty lesions, varying in size from a pea to a fifty-cent piece, and situated on various parts of the body. In treating the different areas the usual amount of reaction occurred, accompanied with but little pain, with the exception of one dime-sized lesion on the right arm, near the axilla. The patient began to complain of severe pain a few seconds after the snow was applied and for fifteen or twenty minutes the pain was intense. We found that a superficial sensory nerve had been frozen, which was followed by complete anesthesia of the flexor surface of the forearm. After a period of about five weeks, sensation was again normal.

In applying the snow to the forehead of another case, a sensory nerve was frozen, an area of anesthesia on the scalp resulting. In both of these cases it was some time before the normal sensation returned. So, in most cases, I think it is better to give a mild treatment at first, and then, if you do not get a very severe reaction, you can increase it.

From what I have seen in the treatment of lupus vulgaris with the solidified carbon dioxide, the results in the small nodular lesions are much more satisfactory. I remember a little boy who had a small lesion on the side of his cheek, which he had had for three years. After three treatments, fifteen to twenty seconds in duration, at intervals of two weeks, it had disappeared, and after three months showed no tendency to recurrence.

In regard to tattoo marks, I recall a young man who had been in a boiler explosion. He was treated a number of times, possibly six or eight, to see if any results could be obtained, but there was not sufficient to justify further treatment. The color did become a little lighter, but it was so very unsatisfactory that the treatment was discontinued.

There is no doubt, as Dr. Pusey has told you, that one of the conditions where it is of the most benefit is in senile keratoses and pre-epitheliomatous hyperkeratoses, which we see so frequently. In these conditions one treatment will not infrequently entirely clean up the condition.

The small epitheliomata are unquestionably, in my mind, best treated with radiotherapy. In some we get very good results with the carbon dioxide, but in the deeper ones radiotherapy produces better results and is the method of choice.

I believe there are other conditions in addition to those mentioned to-night where it will be of material aid to us as a therapeutic agent. It is certainly efficient when applied with care and discretion.

Dr. E. A. Fischkin: I can not add much to what Dr. Pusey has so well told you regarding the use of the snow. Dr. Pusey is to all practical intents the originator of the use of carbon dioxide not only in this country, but in foreign countries as well. In the German and other foreign journals a great deal of space is now devoted to the treatment with carbon dioxide, and I was told only lately by a doctor who visited Norway that over there they call it "Pusey's treatment."

We have all used it more or less, and I hope Dr. Zeisler will not accuse me of stealing his thunder, when I say, that some of my cases were much like his. I, too, had a man come in from the country, who could stay here but one day, and it was absolutely necessary that I do all possible for him in that one treatment. I certainly could not have used any other method in that lesion; the x-ray would not do, nor would the caustics. It was a deep-seated epithelioma of the temporal region, the size of a dollar, very hard at the edges, with a granulating easily bleeding base and surrounded by a thickened very hard scaling skin. I used the snow with considerable pressure for about two minutes. There was bleeding from the base after thawing, which was soon checked by pressure. I was surprised, after six or eight weeks, to receive a letter from his physician,

informing me that the ulcer is all healed. In about a year he came back with an ulceration of about half the size of the former. I again applied carbon dioxide and gave but one treatment. It has now been two years and I have heard nothing from him, so I believe he is cured.

In the milder forms of epithelioma, especially, it is the ideal method and cures in a very short time.

I will not take your time to repeat my experiences, which coincide with those of the other speakers, but I want to supplement in some ways a few things which Dr. Pusey may have dealt with too lightly, owing to the shortness of time. In lupus erythematosus it is, as Dr. Pusey claims, the very best method of treatment, but not in all cases. I believe that it is not applicable to those cases where the patches show severe atrophy, where it has left a very thin, cigarette-paper-like epidermis, easily cracked, easily broken over the patch, a condition of lupus erythematosus which we may call incurable, and here, surely, the application of snow is almost detrimental. The pain is excruciating, lasting for hours, and it produces irritation without any beneficial results whatever. In those cases of long standing where the atrophy is severe I should not use this method.

I have used the snow in other conditions which were not mentioned here this evening. I treated a lady with multiple hard fibromata of the face, the largest being the size of a cherry. I destroyed the main bulk of the tumor by electrolysis and then, before the scar had contracted, I used the snow and have gained almost ideal results; perfect smoothness of surface and the skin almost of normal color. That is a result which we have never been able to reach with any method previously devised.

It is now the common experience that the flat nevus flammeus or portwine mark is less amenable to treatment than the angiomatic tumor. I have treated a number of these tumors in children, about like that we saw here this evening, with the skin more livid in color and much thinner, and I have used considerable more pressure and only two applications. The first destroyed the tumor absolutely leaving only some traces which were removed by the second application. But I can not boast of the same results in port-wine nevi. One case of this kind was of the child of a doctor in Springfield. For the reason that the child had to be brought to Chicago for each treatment I have used some pressure. It produced superficial ulceration of the skin which took some two weeks to heal, but the discoloration is still there. That has since been my experience in all such cases. I have treated one young lady, with a port-wine mark occupying almost a third of the cheek, for almost a year, repeating applications in intervals of 4 to 5 weeks. The final result is a little improvement over the deep blue red color of the old nevus, but it is still a disfigurement. But, as Dr. Pusey has stated, we do get ideal results in angiomatic tumors, especially those of children.

Dr. J. S. Nagel: I did not arrive in time to hear this paper and can, therefore, only add my little personal experience with the snow. The Goosman apparatus, mentioned by Dr. Zeisler, is the one I use. It is not much different than the molding apparatus you saw except that it is compact on a frame and well suited to office work, especially where you do not have occasion to use a great amount of the snow. It takes up very little space and at present is much cheaper than when first put upon the market.

Dr. Pusey made one remark as to "there being no pain!" I do not know whether he referred to the case of the baby he was treating, or to the application of the snow in general. I have noticed that in freezing over nerve trunks that are more or less superficial there has been neuralgia and severe pain.

The efficacy of the treatment is well established and has passed the experimental stage. One use for it is in venereal warts. It works very successfully and it is not necessary to produce the amount of freezing here that you do in some other lesions.

Dr. Pusey (closing the discussion): It is a pleasant experience to have my colleagues so generous in the treatment of me and the method, but it is not unexpected; that has been my frequent experience with them. Dr. Zeisler has before chided me for not having made broader claims for the therapeutic applica-

tion of the method, but I have felt that it was, as it were, my own baby so that I did not want to be too emphatic about its good qualities. Immediately after I introduced the method Dr. Zeisler saw its possibilities and his statement is true that he has done much in popularizing it, always giving me the most generous credit.

I find nothing to add to what the gentlemen have said. I have felt that in introducing the method it was chiefly necessary to call attention to its indications and the methods of its use. With that fundamental information the possibility of its application to various conditions could largely be left to the ingenuity of the individual user. Its application of course is wider than the affections we have taken up to-night.

I would like again to express my appreciation of the generous tone of the discussion this evening.

SKIAGRAPHY IN UROLOGIC DIAGNOSIS *

R. D. CARMAN, M.D.

ST. LOUIS

The increasing efficiency of the Roentgen rays as a diagnostic adjunct is especially marked in genito-urinary conditions. Among the conditions in which the *x*-rays are being advantageously employed are renal, ureteral, vesical and prostatic calculi, hydronephrosis, pyonephrosis, bladder diverticulum, kidney tumors, hydro-ureter, tuberculosis and nephroptosis. In all these the rays have been utilized with benefit, and in some of them they are almost indispensable.

The usefulness of roentgenography is most conspicuous in renal lithiasis, and an examination for this condition is neither complete nor decisive without skiagraphy. In the early days of roentgenology, when the technic was rather imperfect, errors were not infrequently made, although there was a majority of creditable successes. With a larger experience, a better understanding of the technic and greatly improved apparatus, roentgenologists have reduced their errors to a minimum, probably not greater than 5 per cent.

Errors have been of two kinds: positive and negative. That is to say, stones have been diagnosticated when none was present, and stones have not been found when they were present. The causes of positive errors include calcified lymph nodes, phleboliths, fractured transverse processes of the vertebrae, calcareous deposits in the muscles, ligaments or lower ribs, atheromatous arteries, scybala or fecal concretions, moles and warts on the skin of the back, fibrous tissue in old scars, defective plates and drugs (bismuth, iodine, salol, etc.), in the intestines. Moisture from perspiration on the envelope may make a shadow like that of a stone.

The most important of these causes of positive errors are phleboliths and calcified lymph nodes, which are rather common, the former in particular.

Phleboliths are usually round, multiple, low in the pelvis, laterally placed, and sometimes scattered in such a manner that an extra-ureteral

* Read before the St. Louis Medical Society, Nov. 11, 1911.

situation can thus be determined. Calcified lymph nodes are usually larger than phleboliths, less numerous, and inclined to be more irregular in shape. Their situation is variable, and they are more confusing when within the pelvis. Many roentgenologists claim that they can differentiate phleboliths and calcified nodes from calculi on the skiagraph, but in my experience this has not always been possible without using the styleted catheter. As a further precaution, stereoscopic views may be necessary to determine the relation of the shadow to that of the stylet.



Fig. 1.—Stone in left kidney.

The possibility of stone in a ureteral pocket, permitting the passage of the styleted catheter alongside, thus making an interpretation doubtful, might be met by injecting an opaque silver solution into the ureter. Communication between the pocket and ureter would thus be shown. The other causes of positive error can usually be eliminated by a careful technic, close study of the plates, by repeated examinations, and by purgation. This latter, which is a routine procedure prior to skiagraphy to eliminate scybalæ and fecal concretions, has the disadvantage sometimes of pro-

ducing gas in the bowels. If large in amount the gas obscures the kidney shadow as well as calculi that may be present. Recently in two of my cases the gas was so abundant that a diagnosis was impossible until after the patients were given salts for three or four mornings. Charcoal was also administered, and gas-forming foods, such as carbohydrates, were withheld. At the end of this time, skiagraphs of these cases showed the kidney shadow without difficulty, no gas being present.



Fig. 2.—Hydronephrosis; shown after injection with collargol.

Negative errors, namely, failure to skiagraph stones which are present, are perhaps more frequent. The principal causes are obesity of the patient, under-exposed and over-exposed plates, smallness of the calculus, and unusual transparency of the stone (uric acid). Unless the obesity is extraordinary the difficulty may be surmounted by the usual means; that is to say, by using extreme compression, the intensifying screen, and a tube of medium hardness. A plate rich in detail must be gotten, and repeated exposures may be necessary. The same technic is indicated for

pure uric acid calculi. In form, these are usually the small "mulberry" stones, and the small size is an added hindrance to detection. Pure uric acid calculi are, as is well known, slightly if at all opaque to the rays, and may escape skiagraphic demonstration. But the invocation of this as a reason for failure is seldom justified, since it is known that such stones are extremely rare. This fact has been recently emphasized by Moore,¹ who found on a chemical analysis of renal and ureteral stones that every one contained a large percentage of calcium salts. The maximum of uric acid in any stone was 10 per cent. The wide-spread



Fig. 3.—Normal kidney pelvis and ureter injected with collargol.

belief that these stones are frequently uric acid, Moore accounts for by the fact that surgeons are loath to give up "the trophies of their surgical skill" for destruction and analysis.

A careful inventory of all the reasons assigned for failure leaves the impression that the chief reason, after all, is defective skiagraphy, which is avoidable and constantly growing less common.

A good kidney skiagraph has been defined as one which shows the psoas muscle, the transverse processes of the vertebræ, and the last two ribs. Rather, I think, should it be defined as one which shows the outline of the kidney. Roentgenologists have been inclined to the opinion that

1. Brit. Med. Jour., April 1, 1911.

demonstration of this outline was only possible with a dense kidney or one with a thickened capsule. Even so great an authority as Fenwick² seems to have this belief. My own observation and experience have convinced me that skiagraphing the kidney properly is essentially a matter of immobilizing it sufficiently long to make the brief exposure that is required. When thus fixed, with the otherwise ordinary technic, the kidney will be usually outlined with satisfactory clearness. Fixation I



Fig. 4.—Ptosis of right kidney.

accomplish with the aid of the luffa sponge (which we owe to Sträter) or by suspended respiration, or, preferably, both. The sponge pushes the hollow viscera away from the kidney, and thus allows greater compression and thinning of the parts. Being forced up under the costal arch, it more

2. Brit. Med. Jour., April 1, 1911.

or less fixes the diaphragm on that side and thus immobilizes the corresponding kidney. If this be done with painstaking care, suspension of respiration by the patient is not always necessary. In those cases where the costal arch is so narrow that the sponge cannot be successfully used, the compressing cylinder should be brought down on the arch, and exposure made as rapidly as possible during suspended respiration.



Fig. 5.—Left kidney, normal position; fellow of ptosed kidney in Figure 4.

The semi-sitting posture which has been recommended to facilitate skiagraphy through the axis of the pelvis and thus avoid superposing the shadows of the pelvic bones, is, I think, unnecessary, as a tube appropriate for this work will differentiate even through bone.

Emphasis should be laid on the necessity of examining both sides or even the entire genito-urinary tract, in cases of suspected renal stone. If operation is intended the condition of the other kidney should be known.

Besides, the symptoms are not infrequently referred by the patient to the side opposite to the one affected. Sometimes, too, stones are found in both kidneys or both ureters, and the larger may be on the unsuspected side. Occasionally patients are sent to the roentgenologist with instructions to skiagraph one kidney. This is somewhat comparable to an oculist examining only one eye in a case of defective vision.

The regrettable circumstance of a patient passing a calculus after a negative report from the roentgenologist, should not reflect on the radiographer at all, unless he was asked to skiagraph the entire urinary tract.



Fig. 6.—Stone in bladder.

Text-books give the symptoms of a typical case of urinary calculus, but unfortunately in such cases the rays will often show an absence of stone. For example, prostatitis, also spinal osteo-arthritis, may cause symptoms suggestive of renal colic. Contrariwise, cases in which the symptoms are atypical are often proved by *x*-rays to have stone. Indeed, such cases are sometimes sent to the radiographer to be examined for some other suspected and totally different condition. I have had a predominance of cases in which the concretions gave rise to few symptoms, and these were slight and indefinite. This experience inclines me to the belief that like gall-stones, kidney stones might be present throughout life without causing any noteworthy symptoms. On the whole, it

would appear that urinary calculi are more common than is generally supposed.

Fluoroscopy, though less dependable than skiagraphy, will often show the presence of calculi. In one of the cases here illustrated (Fig. 1) the stone was first discovered by means of the fluoroscope, the examination being made for other purposes. Here, too, was seen the necessity for fixation of the kidney.

Injections of a 10 per cent. collargol solution into the kidney pelvis in hydronephrosis, etc., prior to skiagraphy facilitates the work (Fig. 2). In injecting the solution the technic of Oehlecker or one similar is advantageous. The intestines should be well evacuated. Morphin is administered preliminarily. A No. 5 or 6 catheter is passed into the ureter as high as possible. The small size of the catheter permits a back flow, and thus prevents overdistention of the kidney pelvis. The warmed solution is conducted from a burette under gravity pressure, the burette being kept low at first, and gradually raised to a moderate height only.

In a few cases within my experience, the use of collargol was followed by untoward effects such as pain, tenesmus, urgency, and even pyelitis. But these effects were probably due to the employment by the cystoscopist of an over-large catheter and a piston syringe, thus unduly distending the kidney pelvis and ureter.

The injection of an opaque silver solution, such as collargol or cargentis, has many advantages in urinary radiography. The position of the kidney can thus be definitely determined in cases where this is otherwise difficult. If a stone be present, it will usually show whether it is in the pelvis or parenchyma, an important matter to the surgeon; in hydronephrosis, pyonephrosis, kinking of the ureter, etc., its value is obvious. It could be employed to confirm a nephroptosis.

In pyelitis, collargol in 5 or 10 per cent. solution may be injected as a therapeutic agent, and radiography at the same time is thus made more informative.

The use of this solution will always aid in the determination of ureteral dilatation. In this connection, it is of interest to note that B. Jolly, quoted by Oehlecker, found in ninety-four women who had ureteral dilatation, that the dilatation occurred in the right ureter in 93 per cent., and in the left in 7 per cent. This he ascribes to pressure of the fetus in its usual position. Dilatation of the ureter is also often associated with pyelitis.

Typical advanced cases of tubercular kidney, with cheesy or calcareous deposits, can be skiagraphically shown. In suspected cases, enlargement of the kidney is suggestive, and sometimes the only observable change.

One of the cases which lately came into my hands is of interest. The patient had been skiagraphed in another city, for renal trouble, but nothing was found. Coming to St. Louis, she became the patient of a surgeon who referred her to me for *x-ray* examination. The plate showed an opacity over a centimeter in diameter in the kidney, which somewhat resembled a stone, but was not distinctive. The kidney was not enlarged. The *x-ray* diagnosis given was: "probably stone; shadow not wholly char-

acteristic." On operation the kidney proved to be tubercular, the shadow being due to caseous material.

Nearly all cases of nephroptosis can be determined by the rays. Lately a case was referred to me by an urologist who had found that the ureteral catheter was arrested at a point 3 inches lower on the right than on the opposite side. A stone in the ureter was suspected, and the case referred for a skiagraph. The radiographs, which showed both kidneys, showed a ptosis of the right kidney (Figs. 4 and 5).

Vesical and prostatic calculi are almost always demonstrable by the rays. Vesical calculi are sometimes purely uric acid, as shown by analysis. Most often both vesical and prostatic stones are phosphatic and soft. Being immersed in urine, their faint shadow is often somewhat eclipsed in the shadows of the sacrum and pubes. Therefore great care is necessary here to avoid error (Fig. 6).

Pyonephrosis, unless the pus be inspissated, is not readily seen without injection of collargol. But enlargement of the kidney may be found, and this, in conjunction with cystoscopic examination, may lead to a diagnosis.

Diverticula of the bladder are readily skiagraphed after injection with solutions of the opaque silver salts. This is also true of hydro-ureter.

Tumors of the kidney may or may not be shown skiagraphically, depending on their size, density and location. Hypernephroma may or may not be discoverable. These latter sometimes contain calcareous deposits.

In closing, it ought to be said that satisfactory skiagraphy of the genito-urinary tract, the same as satisfactory skiagraphy of other regions, requires apparatus properly handled in order that a good skiagram may be obtained. This accomplished, there remains the equally important factor of interpretation, and the information derived from the negative will depend largely on the personal experience of the roentgenologist in reading the plates of particular conditions. This sort of experience, of course, varies in different degrees and in different directions, but is being constantly added to, and accounts in great measure for the improved x-ray work of recent years.

4318 Olive Street.

SKIN SENSITIZATION *

ERNEST L. McEWEN, M.D.

CHICAGO

It is matter of popular belief that the victim of "poison ivy" acquires through his attack of dermatitis a taint of the blood which renders him subject to frequent recurrences without actual contact with the plant. This belief is quite universal and cannot have arisen without some show

* Read as President's Address before the Evanston Branch of the Chicago Medical Society, Sept. 28, 1911.

of reason. In fact, it is well established clinically that an attack of dermatitis venenata, whether from poison ivy or other agent, is often followed after complete healing by a number of subsequent attacks, extending perhaps over a term of years. The lack of an apparent cause for these recurrences leads to the assumption by the laity of "something wrong with the blood."

Closer inquiry into these cases, however, usually reveals a source of external irritation often entirely different from the original and very frequently of low potency; that is, low in its power to produce a disturbance on a skin of average resistance. In other words, the individual has experienced a loss of resistance in the skin. The following case illustrates these points fairly well:

Mrs. G. W. N. is 40 years old; weighs about 200 pounds; has never had children; likes good things to eat but controls her appetite, and is in apparently good health. She has done a great deal of painting on china. In the last 8 years she has had six attacks of acute dermatitis varying in severity and cause. The first involved the face and neck and presented the usual characteristics of a dermatitis venenata; sudden appearance with itching, swelling, and vesication, with gradual subsidence. The cause she believes was the use of a towel for wiping the face which had previously been used by a woman with an acute dermatitis of the hand produced by new dyed kid gloves. Several years after this experience a second attack involved the face and neck. In this instance the active agent was a green dust from the wall paper with which her bedroom was being decorated. This attack was severe but did not extend to other parts. About two years ago an eruption of the usual type appeared on the left hand and forearm. Here the cause was plainly the action of painting materials upon a skin the resistance of which had been reduced in the following manner: She was engaged in painting some steins of large size; to facilitate the work the left hand was thrust into the deep and narrow vessel to steady it while she applied the paint with the right hand. Several hours of the work resulted in a decided maceration of the skin of the left hand by perspiration; this was followed in a short time by the development of a sharp dermatitis. It is possible in this instance that some part was played by the dust, grit, or chemical products of the glazing process which may have been present within the stein. A few months after healing the same parts were affected in the same way from the same cause, the only difference being that the last attack was rather more severe. During July of the present year the face became acutely inflamed following the use of some old and rancid cold cream salve. Within the last few weeks the sixth and most severe attack of all developed. The beginning lesion was on the calf of the leg. The cause is believed to have operated as follows: Near her home, which is located in the midst of the poison ivy region of the north shore, is a narrow walk fringed with poison ivy: along this walk she was obliged to pass one night after the dew had commenced to fall, and to protect her skirts from the wet carried them in her hand; a splash of moisture from the poison ivy is supposed to have fallen on the stocking for in the morning a reddened, slightly swollen, and intensely itching area developed on the leg; this was vigorously scratched, vesicles developed, and in a short time new lesions appeared on the forearms and shoulders; subsequently the back, thighs, face and hands became involved. The lesions were typically those of dermatitis venenata produced by poison ivy, and the parts most violently affected were the face and the left forearm and hand.

To summarize, this patient has had six attacks of dermatitis venenata in eight years, with five different causal agents acting: a contaminated towel, wall-paper dust, materials connected with china painting, rancid cold cream, and poison ivy. Some of these factors were weak either quali-

tatively or quantitatively, yet were efficient to produce trouble. The skin resistance is so reduced that she finds even the dust of ordinary room cleaning decidedly irritating.

The patient has light hair and a clear skin of fine texture. Her habits are quite normal. She is fond of good living but because of her weight is abstemious in diet. Strict attention is given to the condition of her bowels: menstruation is regular, though scanty. She has had at times joint pains lasting for short periods, but aside from this fact there is nothing in the way of a constitutional dyscrasia to throw light on the frequency of her skin disturbances.

Her experience is not essentially different from that of hundreds of other victims of recurring dermatitis. Every time one encounters a case of this sort the question presents itself: Why is the individual's skin so susceptible? A simple answer, already formulated by the laity, is that the "blood" is at fault. The "poison," as in ivy dermatitis, has "gotten into the system." This may be taken to mean that a toxin has gained access to the circulating medium and at undetermined intervals "breaks out" on some portion of the body. It is a common notion that this "coming out" of the poison is a good sign, indicating that the system is throwing off the noxious agent. The idea of a poison in the blood does not simplify the problem. By subordinating or omitting entirely the factor of external influences it places the problem at once into that most obscure of all etiologic categories, viz., the internal causes of skin diseases. Instead of being an answer it created a series of questions, none of which is easier than the original: What are the internal elements which constitute a predisposition to any particular skin disease? Why does the blood laden with toxin, circulating everywhere, fail to produce a dermatitis except occasionally? Why is the dermatitis local at times instead of being always generalized? What is the nature of the poisonous agent and what is the pathologic mechanism by which the blood freighted with it produces a local lesion? These questions are exceedingly difficult, even if not unanswerable.

The practically constant presence in these cases of an external irritant in the later attacks precludes the possibility of an unaided internal cause and necessitates the assumption of some sort of change in the elements composing the skin to account for the lowering of normal resistance.

The term "skin sensitization" serves well to designate this alternation without, however, defining it. The determination of the factors which enter into the process is one of the promising fields for investigation in dermatology.

The reduction of the skin resistance to agents which may produce dermatitis means that the train of factors which make up the inflammation complex is more easily set in motion. The steps in the process of inflammation are: dilatation of the blood-vessels, slowing of the blood-current and margination of the leukocytes, diapedesis of the blood elements, and proliferation of the fixed tissue cells. To produce an inflammation in the skin, a local irritant is necessary, either conveyed to the part by the blood, developed *in situ*, or gaining access from the exterior.

If a smaller dosage of irritant applied externally a second time suffices to produce as great a dermatitis as on first application, then the power of the irritant to produce a response has been augmented after reaching the skin. This increase of potency may be absolute or relative. Absolute, by direct addition to its chemotaxic power without alteration in the tissues concerned in the inflammation complex: relative, if these tissues have been changed or influenced in such a way as to make them more sensitive in reaction toward a given irritant; in other words, more favorable to chemotaxis. Inflammation is a conservative process having for its end the removal of irritants and the repair of tissues. With certain limitations we may say that the greater the irritant the greater the inflammation. It therefore makes no essential difference whether the increase in the power of the irritant is absolute or relative, the results are the same, viz., a more vigorous manifestation of the clinical signs of inflammation.

How may the potency of the irritant be increased absolutely? One way at least is by chemical reaction between the irritant and the tissue elements as the result of which something of greater chemotaxic properties is produced. How may the potency be increased relatively? Possibly by some interplay between the irritant and the tissue components by means of which the diapedesis of the blood elements is accelerated; perhaps by increased irritability of the vasodilator nerves, by increased viscosity of the vessel endothelium, or by change in the endothelium and intercellular spaces making them more permeable. What brings about these chemical changes? This is a fundamental question. As the purpose of this brief paper is merely to present the problem, the solution may only be suggested. It seems highly probable, reasoning from what has already been discovered experimentally, that in the phenomenon of anaphylaxis will be found the key to the question. Indeed, there is scarcely any more promising domain for profitable investigation by the dermatologist than that of anaphylaxis. Creditable work in this direction has already been done and results of greatest importance as regards the etiology of skin diseases may confidently be expected in the not distant future.

32 North State Street.

BILIRUBINURIA: CLINICAL CHOLURIA

B. G. R. WILLIAMS, M.D.

PARIS, ILL.

From the Private Laboratory of Dr. Williams

The urinary bile tests and their value in diagnostic procedures are given considerable space in most texts. However, the information seems to be unclassified and difficult to collect for practical purposes, except in rather lengthy consultations with many authorities.

Having made a special study of these reactions, as routine procedures, while examining over 1,000 urinary specimens, I desire to offer certain

explanations and volunteer some general information on several phases of the subject.

In the beginning, I wish to make two statements: first, that the bile test, if properly applied, offers many valuable aids when collecting evidence concerning disease processes: but that the test, as it is usually carried out and interpreted, loses its diagnostic significance.

Quite recently, a urine from a case of "stomach disorder," was tested in my laboratory. A certain delicate bile test was applied, merely as a routine procedure. A positive reaction directed the attention from the stomach to another organ. The excellent results which followed the rational therapy instituted fully repaid for the labor lost in those many specimens negative to the test. As a matter of fact, however, the positive reaction is not infrequently observed in routine analyses of the urine.

CHOLURIA, AND ITS MODERN MEANING

Time was when the biliary acids or acid salts were supposed to be the toxic and otherwise important factors to the causation of those morbid symptoms coincident to the entrance of the hepatic excretory products into the blood. But these are rarely or never demonstrated in large quantities in the urine and their detection is attended with much difficulty or is often impossible. It has been with considerable relief, therefore, to the diagnostician, that these older views have been proved incorrect and his attention directed to bilirubin, the bile pigment or at least the principal bile pigment, as the chief toxic factor of those hepatic excretions taken up by the circulation. And bilirubin, as a urinary constituent, is easily detected when tests are properly selected and applied.

BILIRUBINURIA

The spleen, once termed the "cradle and the grave" of the erythrocyte or red blood-cell, falls somewhat short at this post. Without entering the question fully, I wish to direct the attention of the reader to the excretory function of the liver, confining my paper to the fate of the waste hemoglobin. This substance is altered in the hepatic parenchyma and reaches the bile capillary as hematoidin or bilirubin, a reddish or yellowish pigment which has been robbed of its iron. This excretory product is, of itself, quite poisonous, as will be shown later.

Passing normally into the intestine, it is finally reduced so completely by those bacteria usually present into harmless urobilin, that very little free and toxic bilirubin is found in the feces. This urobilin gives the yellow color to the normal stool. Much of it passes from the bowel into the circulation and eventually forms the principal urinary pigment. Enough for the physiologic process.

In certain pathologic conditions, which I shall later classify, the toxic bilirubin passes not only into the bile capillaries but likewise into the vascular and lymphatic passages, thence to the general circulation and the poisonous body is eventually excreted by the kidneys.

Such constitutes, briefly, the essential explanation of the presence of bilirubin in the urine of certain pathologic conditions. It is not in the scope of this communication to discuss the other biliary pigments. Certain it is that as constituents of normal bile, their proportions must be exceedingly small. They are noted rather as laboratory products in the oxidation of old specimens, etc. After absorption of the bilirubin into the blood, some of these oxidation changes take place. When deposited in the tissues, the green biliverdin is soon formed. In severe cases of jaundice, the liver itself possibly attacks the bilirubin, oxidizing it to the green pigment even before it is absorbed. But so far as the chief toxic factor in cholemia is concerned, we may wisely devote every attention to bilirubin.

BILIRUBINEMIA

The absorption of toxic bilirubin by the lymph and blood is of more frequent occurrence than was formerly supposed. In fact, the more delicate bile tests, when properly applied as routine procedures, so frequently exhibit the positive reaction in the urine as to be actually startling. When testing for evidences of nephritis, diabetes, etc., we are surprised to find a positive bilirubin test.

The poisonous nature of bilirubin is undoubted. Nancrede, referring to the subject, states: "The coloring matters contained in the bile are ten times more poisonous than the biliary salts usually credited with so much toxicity. A man secretes enough poisons in the bile each twenty-four hours to kill three men of the same weight as himself. The poisons of bile are known to be six times more toxic than those of the urine and lead to destruction of the red cells of the blood and those of other tissues, notably the hepatic cells themselves."

Autointoxication, following a sluggishly functioning liver with absorption of small amounts of toxic bilirubin, is undoubtedly a frequent condition. In this connection, it is well to remember that many forms of autotoxemia besides coprenia, where the products of abnormal putrefaction in the bowels are absorbed, have been recognized by clinicians. It is impossible to go into such a classification in this space: and I can merely point out that bilirubinemia is merely one of the conditions.

What symptoms and signs do we meet in bilirubinemia? Noting hastily the infrequency of the pulse-rate and its slow character with the tendency to a subnormal temperature, our attention becomes directed to a peculiar complex of nervous symptoms.

Persons who are poisoned by bilirubin show a tendency to mental depression accompanied by extreme irritability. The attack usually comes on in the morning after a night of terrifying and depressing dreams. The patient wakes with the "blues" and a peevish or "out of sorts" feeling. He becomes snappish or "ugly" when crossed. The merest trifles bring on fits of anger. He curses his clerks or snarls at his employer. His friends say that his liver is "out of kelter" and they are correct. There is bilirubin in his blood and he really feels as miserable as possible. A tendency to itching is not unusual, especially in the prolonged attacks.

A headache, usually of the frontal region and associated with giddiness, is frequently noted in bilirubinemia. A weight is on the cranium and the patient not so sure on his feet. In an acute attack, there may be no color changes in the sclerae. But, eventually, when the bilirubin continues to escape into the lymphatics and blood, a yellowish or greenish color develops as the result of a bilirubin deposit and its oxidation into biliverdin. It might be well to note that this pigmentation may often be detected under the tongue long before the sclerae are tinted. The stomach and intestine appear to be very susceptible to the toxic action of bilirubin and an endless variety of symptoms may result: nausea, dyspepsia, constipation, diarrhea, etc. The tongue becomes coated and this coat may show a greenish tinge.

These constitute the symptoms and signs usually observed in bilirubinemia. Clay-colored stools, as noted in obstructive jaundice, are explained by mechanical means rather than toxic. Before entering into a consideration of the urinary findings, suppose that we note the condition of the blood. Bilirubin, once a portion of the hemoglobin molecule and favored in chemical physiology, is suddenly robbed of its iron and cast aside as a waste product. Entering again into the circulation, its former domicile, it is treated as an enemy and a fierce battle is waged. Some of it, notably in *icterus neonatorum*, may be thrown into the tissues as crystals and disposed of at leisure by their cells. But the warfare is usually of a complex nature. Beyond a doubt, chemical antibodies are eventually formed in severe cases of jaundice, and as such neutralize to a certain extent the toxic action of the bilirubin; else death would not be so delayed, but the blood is usually weakened by the fight. As stated above, the red cells are destroyed, and the presence of hemosiderin in the lymph-glands bears testimony undeniable to this fact. But the coagulation functions are likewise impaired. There is a tendency to hemorrhage and this is checked only with difficulty, a point of some moment to surgeons. Blood tests show that the normal coagulation time of two minutes may be increased to ten minutes or even longer.

URINARY FINDINGS

Even though the amount of bilirubin be slight, the kidney early lends its aid to the blood in overcoming and disposing of this toxic body. Its excretion is rapid and certainly occurs before any considerable amount enters the tissues. The slightest bilirubinemia may not give rise to bilirubinuria even as shown by our finest tests. But when the symptoms become of any consequence, however, and no tinting of the tissues is visible, the positive reaction often clears up the diagnosis.

Once more and finally, bilirubin and its associated products, wounded veterans of the fray, are banished from the blood. But the kidney as well as the blood suffers injury in the deadly battle. Especially susceptible to the toxic body are the secreting cells in the convoluted portions of the uriniferous tubules. In these, the deposit of bilirubin is tremendous. Unable to excrete it rapidly enough, these poisoned cells become stained

and are pushed off from their attachments to the basement membrane, the urine current sweeping them away. If the process is marked, they may be found as constituents of hyalin casts. The latter are rarely absent in severe cases of jaundice and, even though they contain no tinted cells, are of themselves stained by the pigment. The excretion of the pigment may be so marked that the urine is visibly colored green or brown.

Clinically, bilirubin may be detected in the urine in very minute traces indeed. The bile salts are not the chief toxic bodies and difficulty certainly attends their detection as a routine measure. It is scarcely worth the space to consider them. To reiterate, the characteristics of these urines are as follows:

1. Delicate chemical tests show the invariable presence of bilirubin in all cases where the symptoms of bilirubinemia are at all marked, even before the tinting of the skin may show the true nature of the disease.

2. Almost as early microscopic examinations of centrifugalized specimens demonstrate the presence of stained and desquamated renal cells.

3. As the bilirubinemia becomes more marked, the urine becomes brown or green, especially the foam; and shows the invariable presence of bilirubin, even though the crude chemical tests are employed.

4. In marked cases, we are very likely to find hyalin or even granular casts, these showing a yellowish tinge or containing pigmented renal cells.

5. Occasionally, especially in concentrated urines, the crystals of bilirubin, tufts of fine brown needles, occur either in or out of the cells.

It is interesting to note that some authorities, notably Rieder, insist that the cells of the convoluted portions of the uriniferous tubule are rarely or never desquamated and recognized in the urine. They insist that these cells come rather from the ducts. The matter loses none of its diagnostic import by any such theories even if true. I am of the opinion that these pigmented cells are poisoned secretory elements.

SELECTION OF TESTS

When a urine, containing a considerable amount of bilirubin and associated products, is shaken, a green or brown tint is noted in the foam. This is, of itself, the best of the crude tests. Less delicate and unreliable, and certainly much more difficult of application, is the Gmelin or nitric acid test and its modifications. Since it is the one usually selected by clinicians, it may be well to consider it at some length. The technic is clearly described in the most elementary texts and the good tests usually omitted. The foam test, when properly applied, is much more delicate and less open to error. The nitric acid should not be pure but contain traces of the nitrites or nitrous acid. Almost any medicament given by the mouth either interferes with the reaction or produces confusing color tests. Indican and even skatoxyl may give a false play of colors.

The Gmelin test may be absent or obtained with difficulty in a case where the eye-balls and even the skin are green. On the other hand, its pseudoreactions may lead to erroneous conclusions in an opposite direction.

It is probable that several hundred tests have been devised for the detection of bile pigments in the urine. But most of these have fallen short when searching for the trace. Without confusing the reader with these, I shall attempt to describe that test which I usually employ in routine work. It is not at all difficult, even though its lengthy description might give that impression. It is a combination of the Hamnerstein and Nakayama tests and will detect one part of bilirubin in over 1,000,000 parts of urine.

Equal parts of an acid or acidulated urine and 10 per cent. barium chlorid, are mixed and well shaken. Ten cubic centimeters of this mixture are placed in a centrifuge tube and centrifugalized until the supernatant liquid is clear. If any bilirubin were present, it will have been carried down by the simple sulphates when these were precipitated as insoluble barium sulphate. Hence the supernatant liquid is rejected. Now quickly make up the Hammerstein reagent from chemicals at hand, as follows:

Mix quickly:

Acid nitric, 25 per cent.....	1 drop
Acid hydrochloric, 15 per cent.....	19 drops
Alcohol, 75 per cent.....	5 c.c.

About one-third of this reagent is quickly added to the precipitate in the centrifuge tube and the contents shaken thoroughly. Centrifugalize thoroughly. A green tint in the supernatant liquid indicates the presence of bilirubin and is *always a pathologic finding*.

This test is exceedingly simple when the technic is mastered, and is certainly reliable.

CLASSIFICATION OF CONDITIONS IN WHICH BILIRUBIN IS PRESENT

Here I shall leave details to texts, merely giving that which in my opinion seems the latest and most generally accepted classification of the bilirubinemias and where bilirubin may be demonstrated in the urine:

1. *Functional Bilirubinemias*.—Including those temporary or permanent autotoxemias where bilirubin is released into the circulation in small amounts and its detection in the urine is possible only by the finer tests. Noted especially in the torpid and congested livers of senile individuals, in the actively congested and overworked livers of those who dissipate in eating or drinking. May be observed in those women who exercise not quite enough to prevent a slight passive congestion in the liver capillaries or in those who lace tightly, and dance or otherwise exercise while so doing. The eating of a mince pie or fruit cake has been observed to give rise to bilirubinemia in certain individuals. Again, there are certainly, so far as the diagnostician is concerned, cryptogenic cases of hepatic torpor.

2. *Bilirubinemias of Inflammatory Origin*.—(a) Angiocholitic, inflammations of the bile passages or capillaries. The so-called catarrhal jaundice of primary origin or secondary to infectious fevers, poisons, etc.

(b) Cirrhotic inflammations of the interstitial tissue of the liver.

(c) Cholecystitic, either infectious or calculous inflammations of the gall-bladder.

3. *Bilirubinemias of Malignant Origin*.—Noted in carcinomata of the liver, acute yellow atrophy, malignant syphilitic hepatitis, etc. In these cases, leucin and tyrosin may be found in the urine.

4. *Hematogenous Bilirubinemia*.—Doubtless does not exist. In certain diseases of the blood, the hepatic function may be so impaired that bilirubin is reabsorbed, but not enough could be formed in the blood current alone to give the positive urinary tests. For practical diagnostic purposes, therefore, such reactions point to hepatic pathology.

5. *Pancreatic Bilirubinemias*.—Most diseases of this organ which cause any appreciable increase in size result in pressure on the common bile duct. A urine which shows the presence of both glucose and bilirubin invariably points to a pancreatic pathology.

6. *Bilirubinemias of Mechanical Origin*.—Those factors which dam back the bile current before it reaches the intestine, as the pressure of abdominal tumors, aneurysms, cysts, etc.

CONCLUSIONS

1. Bilirubinuria is a term clinically preferable to choluria.

2. Bilirubinemia is a term clinically preferable to cholemia.

3. Bilirubin is easily detected when present in the urine by means of certain neglected tests fairly easy of application but usually missed by those more difficult and crude tests which seem to stand in high favor with clinicians.

4. Functional bilirubinemia is not an uncommon condition and that bilirubinuria which is usually present is easily detected, being always a strictly pathologic finding.

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FISTULA OF THE RECTUM *

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After summarizing 2,196 cases of rectal fistula studied from hospital records, Dr. Tuttle says that less than 45 per cent. were even claimed on the records as being cured. Not all of these were operated on by rectal specialists, but they were probably cared for by careful, capable surgeons, and it is because of statistics like these that I present this subject. Such figures are inexcusable.

A fistula is a non-granulating sinus within the rectum or about the anus, having one or more openings and resulting from some pre-existing

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abscess usually in the perirectal or ischiorectal structures, but not necessarily so. It may originate in some other organ, as the bladder, urethra, vagina or uterus, a suppurating broad ligament or ovary or a necrosed bone or vertebra. The infection may later burrow into the rectum or the whole trouble may be found to be extrarectal. Therefore, just because your patient has a fistulous opening on the buttock, do not presume it must be rectal, but find out just what it is and then you will more than double the above estimate of percentage of cures. Of course, there are some malignant, tubercular or syphilitic fistulas that are incurable.

Fistulas are often branched or multiple, and the openings may be quite a distance from the anus. The whole perineum and buttock may be indurated and hard, or if the abscess has filled and emptied several times the parts become honeycombed with a great many fistulas communicating with one another. Some part of this great labyrinth is always abscessing. Kelsey reports between twenty and thirty sinuses in one case.

Why do rectal fistulas refuse to heal spontaneously? This question has been answered variously by different authors, but probably a number of factors combine in each case, and after all it resolves itself into the single word reinfection. The percentage of cures is determined by our ability to ferret out these different avenues in the case at hand.

First, there is contact infection by such ways as (a) forcing of fecal matter into the fistula from the bowel; (b) or outside infection through the external opening. (c) Sometimes the small opening or the irregular shape of the fistula retains the infection and prevents proper drainage of the sinuses or holds necrotic tissue in pockets. (d) The tubercular sinus is lined with caseous degenerating granulations and is also surrounded by a dense cicatricial tissue.

In a second class of cases the circulation, venous or lymphatic, is at fault. The human animal spends most of his hours sitting or standing and in this position there is a sluggish return circulation.

Sometimes, even when the sinuses have been widely opened and thoroughly drained and all sloughing tissue has been removed, they still refuse to heal, although careful search fails to show branches or diverticuli. Hartman has suggested that these persist because of osmosis of infecting agents from the rectum through the thin walls of the rectum. I think these tissues become clogged with bacteria, which impede but do not strangulate the tissue until it becomes a harbor of infection. In the same manner there may be a rectal ulcer or other infection which the lymphatics try to carry off, but in so doing the lymph-glands become overloaded and break down, resulting in an abscess, which is drained, thus temporarily relieving the system; but the lymphatic connection between this node and the primary source of infection in the rectum, or wherever it may be, is still virulent and reinfecting the site of the abscess, which is the base of the sinus. This method of infection is, I think, an important factor, because the phagocytic action of the white corpuscles is insufficient or slow; that is, the opsonic index is low. I have recently used the immunizing sera in these cases with very encouraging results. If the sera are used early they stimulate the immunizing mechanism.

Although the pathogenic microorganism is usually the streptococcus, staphylococcus or the colon bacillus, it is not always so. Sometimes tuberculosis, syphilis or carcinoma are at the foundation. It is well to remember that 10 to 14 per cent. of all patients presenting rectal fistulas have active tuberculosis of the lungs, but, of course, not all phthisical patients having rectal fistulas necessarily have tubercular fistulas. Hartman found that 50 per cent. of his cases were tubercular. It is estimated that 5 per cent. of all tubercular patients have rectal fistulas. The nature of the infection may be determined by examining the discharge or scrapings from the lining wall of the fistula, either microscopically or by injecting it into a guinea-pig.

Any exhausting disease, such as rheumatism, diabetes, cirrhosis of the liver or the acute fevers, may have associated an ulceration of the rectum. Typhoid fever and dysentery frequently have such a complication, and then a fistula may result. In the last two diseases a true perirectal abscess may be found that has resulted from the escape through the tissues or the lymphatics of the bacteria that caused the original disease.

Frequently the abscess that caused the fistula originated from an injury or ulceration of the crypts of Morgagni and the lymphatic absorption and infection that takes place. This ulceration may persist after the abscess has opened and drained, because the sinus connects by its lymphatics with the infecting host of the crypt and the pyogenic organisms overwhelm the leukocytes, and thus protract the discharge. It is for this reason that it is so all-important to ferret out the original site and source of infection. Every movement of the rectum, perineum or legs disturbs the approximating surfaces of the sinuses, and a moving surface, of course, cannot adhere.

Fistulas are classified as: 1. Complete, ordinary, external and internal. 2. Incomplete or blind, external and internal. 3. Horseshoe. 4. Rectovaginal. 5. Rectovesical.

The ordinary complete fistula is a sinus with an internal opening into the rectum and one or more openings on the skin. Hence its name. This is the most common type of fistula. An external complete fistula is one with both of its openings on the skin and not communicating with the rectum, while an internal complete is one with both openings within the rectum and not involving the skin. Not every fistula communicates with the rectum, although the great majority of them do.

An incomplete or blind external fistula is one which begins in the perirectal or ischiorectal structures and opens on the skin, but does not extend into the rectum. An incomplete or blind internal fistula has an opening into the rectum and a sinus extending into the perirectal tissues, but has no other opening into the rectum or on the skin. It differs usually from the complete variety in that there is a broad undermining of the mucous membrane instead of narrow channels. The internal opening is situated often at the base of an ulcer or hidden in the folds of mucous membrane.

The horseshoe fistula is nearly always an old case, and takes its name from its fancied resemblance to a horseshoe in shape. In this variety the original openings have become blocked and the retained pus burrows in a

new direction and finds a new outlet. Thus a typical horseshoe fistula has one opening within the rectum and one or more external openings on either side of the anus. Sometimes the pus burrows around the rectum in the loose areolar tissue and forms a new opening on the opposite side of the anus from the first. In this burrowing the pus generally passes posterior to the anus, and very often the internal opening is found in the median line posteriorly. A horseshoe fistula may have only one external opening, and yet the pus may have burrowed all around the rectum and the resulting fistula be either complete or incomplete in form.

Rectovaginal fistulas are of two kinds: First, those high in the vagina, and second, those in the lower part. On the whole, they are uncommon. If the opening is small there is little escape of feces so long as the stool is formed, but one of the most common and annoying symptoms is the escape of intestinal gas which produces a bubbling or hissing noise. The patient has, of course, no control over the escaping gas, and the odor finally forces her to avoid society and to stay at home until she becomes melancholy from brooding over her trouble. A fistula in the upper part of the vagina is usually due to cancer of the cervix, which generally has progressed so far that curative treatment is out of the question. In the lower part of the vagina and at the vulva fistulas often result from imperfect union in repairing a torn perineum or from the sloughing of the septum after tedious parturition. Enterovaginal fistulas or openings of the small intestine into the vagina are traumatic openings produced during operation, or else either congenital or artificial vaginal ani. Rectovesical fistulas, like rectovaginal, are the result of traumatism or malignant disease.

Symptoms.—The first symptom which attracts the patient's attention is the local abscess which has the symptoms of any collection of pus, namely, redness, swelling, pain and fever. The abscess ruptures and discharges its contents, thus relieving the local distention. The tissues are soft and tend to retract and contract, leaving only sufficient opening to permit of the exit of subsequent discharges. The character of the discharges suggests somewhat the age of the fistula. The excretions of a recent abscess are thick, abundant and constant, but as the lining membranes grow old and are covered with lardaceous granulations, the discharges become thin, watery and less in amount. After the abscess has emptied itself the patient suffers no discomfort except the purulent discharge, which is always fetid and sometimes contains gas and feces, making it difficult to keep the parts clean. As the retained pus burrows, forming new abscesses and sinuses, the discharge gradually increases. When the discharge of a given sinus is small in amount and irregular in outflow, the opening tends to become occluded and retention occurs. Thus a new abscess is produced, which ruptures through the old sinus or forms a new outlet. In this way two or more fistulas often connect with a common abscess. In any case if the discharge ceases or becomes irregular, always suspect new abscesses. The incomplete internal fistulas are the most painful, because the retained pus causes pressure during defecation. Such a fistula cannot be diagnosed until a digital examination is made, and the finger when withdrawn is covered with pus and blood. The feces also

when formed are streaked with pus blood. Constipation is induced from fear of pain during defecation, and the sufferer goes on in this condition for years before he seeks surgical relief.

Examination.—Much valuable information as to the character of the fistula and its extent is learned from the patient's description. If a slight abscess, recently ruptured and having a free discharge of a small amount of pus is found, it indicates a small fistula with openings near the external sphincter. The position of the patient for examination is largely a matter of choice. The lithotomy position is more advantageous where the trouble is at the anus or not too far within. The Sims position, the patient resting on the affected side, is preferred by many, especially when making a specular examination. When the trouble is high up within the rectum the knee-chest position is better. No one position suits all cases, and even during the examination of a given case it may be of considerable advantage to change the position because the entire field must be explored. Even if one fistula is found, a thorough search must be made for others or for other rectal troubles. With such an examination the diagnosis is not difficult except in internal incomplete or in the horse-shoe variety. Separate the buttocks by grasping the glutei on either side with one hand, the fingers reaching toward the anus, when, by gentle traction, the external fistulous opening, if near the anus, will be seen in a little depression or in the center of a mass of granulations in the radiating folds of the anus. The external opening may be, however, quite a distance from the anus, even out on the thighs or legs, and be so small as to escape a cursory examination unless a drop of pus be expressed during the manipulations. It may be so small as to admit only a fine probe, except in tubercular fistula, when it is usually ragged or appears as though in the base of an ulcer. By palpating about the anus the tracts may be detected subcutaneously by their hardness, and by a finger in the rectum pressing toward the induration a drop of pus will usually appear at the external opening. The tract is sometimes direct from one opening to another, but there is not necessarily a sinus. The abscess may open directly on the surface. In a recent straight fistula the external opening is large. Sometimes the tract is very circuitous and the pus may burrow under the glutei muscles and open in the groin or on the thigh even as low as the popliteal space. Sir Astley Cooper mentions an autopsy where the fistula opened in the groin, but he traced it back along the spermatic cord and found it ended in an apparently ordinary fistula in the rectum.

The internal opening is frequently just above the external sphincter and is found as an indurated spot or a raised mass or else as an ulcer with rough edges. All ulcerated and inflamed spots must be carefully examined, because they often contain the internal opening of a complete fistula or the opening of an internal incomplete. In case the internal opening is not found, it may be located by injecting milk or some colored fluid through the internal opening. The anus being dilated enough for inspection, the fluid will be seen as it comes through the internal opening into the rectum. Injecting hydrogen peroxid for diagnosis has been suggested because the gaseous disintegration dilates all parts of the sinus

and bubbles through all the internal openings, if more than one are present. There is danger in this procedure that you will drive infective material into new and healthy tissue. The internal opening is not always the upper limit of the fistula, but the mucous membrane may be undermined for several inches above the opening.

A word about probing a fistula: probing at times other than when operating is objectionable and dangerous, because it is painful and may produce new channels, and besides affords no information but what is gained from careful inspection and palpation. If the probe is forced out of the sinus and into the tissues, it may mislead the examiner as to the condition of the fistula, besides carrying infection into new fields, thus forming new sinuses. I never probe a fistula until I am ready to operate: nor do I hunt unnecessarily for the internal opening. It matters little whether you find the internal opening or not, before the operation, for when you operate you will find it much easier than is possible on a conscious patient.

Spasmodic contractures occur during examination if the patient is awake, which make the examination painful and dangerous: but when the patient is anesthetized and quiet, you have no trouble in tracing out any or all sinuses. When probes are used, a large variety are essential, from a fine silver probe to a large, soft, uterine sound. The probe must be introduced carefully and without force until it has gone as far as it will; then with the index finger of the left hand within the rectum, one may find the probe projecting through the internal opening or in some instances covered only with the mucous membrane; or again, it may have passed away from the rectum and cannot be felt at all.

Lardaceous granulations, the result of chronic inflammation, line the tract of the fistula and contain many new-formed blood-vessels. The granulations prevent healing of the sinus by keeping the walls apart. A recent fistula is, however, sometimes lined with healthy granulations which form new tissue, and such a fistula may heal spontaneously.

Blind internal fistulas are the most difficult to diagnose and are found only after a careful examination of the interior of the rectum. Any case presenting persistent uneasiness within the rectum and showing the presence of pus in the stool, unless otherwise explained should be thoroughly examined. The following case is cited to show how misleading a cursory examination may be: Mr. S. W. passed through a mild attack of typhoid fever and at the end of the third week developed a perirectal abscess which was lanced and which promptly healed except a small sinus. From a pinhole opening of this exuded a discharge imperceptible in amount, but sufficient to keep the parts moist and fetid. A digital examination of the rectum some months later revealed a small amount of induration above the external sphincter, but no distinct cordlike sensation that would signify a sinus. The director was introduced and the tissues divided along its full length, thus exposing a suppurating surface, irregularly circular in outline, about $1\frac{1}{2}$ inches in length. All the edges and pyogenic surface of this ulcer were removed and the openings of two deeper sinuses were brought to view. The first tract led almost to the base

of the urethra and important structures were exposed; the second penetrated the rectum just above the sphincter. This latter opening was closed with chromicized catgut sutures after the method of treating rectovaginal fistulas, and with the connective tissues sutured over the first stitches to give additional support. The sinus leading toward the deep perineum was packed wide open and allowed to granulate from its base.

It is important to mention at this time that the finger within the rectum detected nothing that would suggest deep sinuses but nevertheless two very important diverticula existed. The impression on examination was that this was a simple external, complete fistula which would heal kindly if divided on the director. However, such an operation would have been worse than useless, because the outer part of the sinus would have healed over, only to reform again in a few weeks. The stereotyped operation as set down in the text-books, or treating the sinus by astringent injections would have been a signal failure. This case is detailed to show that each fistula must be treated on its own conditions. Frequently narrow branched tracts lead off into the deep tissues and perhaps encroach on vital organs.

Prognosis.—In conclusion let me say spontaneous cure occurs only when the abscess has no rectal communication and when the skin opening is large. In other words, when the abscess is very superficial. In all other instances the sufferer must receive medical attention. This may be minor office treatment or it may be a major surgical operation according to each case. The likelihood of cure depends on circumstances and the underlying cause; but this may be said:

1. Practically all non-tubercular fistulas may be cured.
2. If carefully treated all of these cases will have good rectal control following any operation that may be needed.
3. The majority of tubercular fistulas may be cured if the patient is in good physical condition.
4. Even bad tubercular fistulas may be relieved and secondary suppuration prevented.

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INTERNAL SECRETIONS, WITH SPECIAL REFERENCE TO THE ISLETS OF LANGERHANS OF THE PANCREAS *

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The term "internal secretion" is generally used to designate those secretions of glandular tissues which, instead of being carried off to the exterior by a duct, are eliminated in the blood or lymph. The idea that secretory products may be given off in this way has long been held in

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reference to the ductless glands such as the thyroid, adrenal and pituitary bodies, the mere absence of a duct naturally suggesting such a possibility. Later work, however, has led to amplify our conception of an internal secretion by the assumption that all tissues give off something to the blood which is characteristic, and of importance to the general nutrition. This view in turn led to a revival of certain ideas regarding the treatment of diseases of the different organs by extracts of corresponding tissues. But this broader extension of the idea of internal secretion has not been justified by subsequent work, and to-day we are compelled to limit the term to definitely glandular tissues. Experience has shown, however, that not only the ductless glands, but at least some of the glands provided with ducts, may also give rise to internal secretions, as for example, the liver, kidney or pancreas.

Before considering the subject of the internal secretion of the pancreas, I wish to mention by way of brief review of the more recent work, a few facts relative to the function of the adrenal system which includes besides the adrenal bodies, the thyroid apparatus and the pituitary body.

The Adrenals.—As we are well aware, it is an established fact that removal of the adrenal bodies is rapidly followed by death. the symptoms preceding the death resembling those occurring in Addison's disease (great prostration, great muscular weakness, loss of vascular tone, etc., with marked fall of blood-pressure and rapid feeble cardiac action).

It has been found that when an aqueous extract of the medullary portion of the adrenal gland is injected into the blood of a living animal, it manifests a remarkable influence on the heart and blood-vessels, causing slowing of the heart together with a marked rise in blood-pressure. The extract causes cardiac and vascular contracture by stimulating directly the muscular elements and not by exciting the vasomotor center directly as was formerly thought (since in recent experimental work the same results have been obtained even when a part or the entire cord was removed). The slowing of the heart by the extract is due to the resistance which the increased blood-pressure caused by the injection of the extract, offers to the cardiac contraction and not to its action on any inhibitory mechanism.

A second permissible function of the adrenals is that they produce an antitoxic substance whose function is to neutralize or destroy certain (as yet unknown) poisons from end products of body metabolism. Removal of the adrenals or disease in them, on this theory, causes death because it allows these toxic bodies to accumulate.

Third, that the internal secretion of the adrenals is a constituent of the hemoglobin which carries the oxygen of the air to the tissues, and hence may prove to be an important factor in pulmonary respiration, since it has been found that adrenalized plasma has great affinity for oxygen; another corroborating fact being dyspnea resulting from extirpation of the adrenals.

The Thyroid Apparatus.—1. Neutralizes or destroys toxic substances formed during body metabolism. On this theory, removal of thyroid

tissue results in an accumulation of toxic end products in the blood and death results from auto-intoxication.

2. That it elaborates a secretion characterized by its iodine content, which regulates an important, if not an essential action, on nutrition and metabolism.

3. Stimulates adrenal activity. Acts as an auxiliary organ to the adrenal, in that it supplies the blood with a secretion which directly or indirectly increases adrenal secretory function and thereby augments the activity of oxidation processes.

4. Cyon has also given us the view that inasmuch as these bodies have a very large vascular supply, this area might serve as a flood gate or vascular shunt, to protect mechanically the circulation in the brain.

The Pituitary Body.—The effects of the injection of extracts of this organ resemble very closely those of the adrenals (rise in blood-pressure, slow heart, etc.). Removal of the pituitary body results eventually in death accompanied by symptoms such as muscular tremors and spasms, dyspnea and apathy, which resemble very closely the results of complete thyroidectomy. It has also been stated that the pituitary body undergoes a hypertrophy after thyroidectomy which is believed to be a true, compensatory hypertrophy. It is suggested, therefore, that the pituitary body function is related to that of the thyroid and hence to the adrenals. In other words the adrenal system simultaneously sustains life, perhaps by insuring oxidation, and aims to preserve life, perhaps by its auto-immunization in general. On the whole the evidence in reference to the adrenal system warrants the following conclusions:

1. The thyroid apparatus (including the thyroid and parathyroids), the pituitary body and the adrenals are functionally interdependent and thus constitute the so-called adrenal system.

2. The function of the thyroid apparatus is to supply a secretion to the blood which enables the latter, while circulating through the pituitary body, to excite its center or test-organ.

3. The function of the test-organ of the pituitary body is to react sufficiently under the thyroid secretion to stimulate the adrenals and thus sustain their secretory function and efficiency;

4. The function of the adrenal is to sustain oxygenation and therefore general metabolism by means of its oxygen-laden secretion.

5. If from any cause the functional activity of either one of these organs composing the adrenal system becomes inadequate or excessive, general metabolism is influenced accordingly. Hence,

6. The main function of the adrenal system is (a) to sustain general metabolism, (b) to protect the organism when toxic waste products accumulate in the blood by augmenting the proportion of adrenal secretion to the blood and therefore the antitoxic activity of the latter.

7. The adrenal system therefore is the body's autoprotective and auto-immunizing mechanism.

The Pancreas.—Our knowledge of the importance of the internal secretion of the pancreas we owe to Mehring and Minkowski. These

observers succeeded in extirpating the entire pancreas without causing the immediate death of the animal, and found that in all cases this operation was followed by the appearance of sugar in the urine in considerable quantities. It has been shown further, that when the pancreas is completely removed, a condition of glycosuria inevitably follows even if carbohydrate food is excluded from the diet. If the pancreas is incompletely removed, the glycosuria may be serious, slight, transient, or may even be absent altogether, depending on the amount of pancreatic tissue left *in situ*. According to the workers mentioned, a residue of one-quarter to one-fifth of the gland is sufficient to prevent the appearance of sugar in the urine.

Glycosuria after complete removal of the pancreas from its normal connections may be prevented, partially or completely, by grafting a portion of the pancreas elsewhere in the abdominal cavity or even under the skin. Or, also, the ducts of the pancreas may be completely occluded by ligature without causing a permanent glycosuria. So on the basis of these and similar results, it is believed that the pancreas forms an internal secretion which passes into the blood and plays an important, or rather an essential part in carbohydrate metabolism. Moreover, considerable evidence has been accumulated to show that the tissue concerned in this important function is not the pancreatic tissue proper, but that composing the so-called islands of Langerhans. In man these islands are scattered through the pancreas, being more numerous, however, in the splenic end, forming spherical or oval bodies that may reach the diameter of as much as 1 millimeter. The cells in these bodies are polygonal. Their cytoplasm is pale, finely granular, and small in amount. The nuclei possess a thick chromatin network, which stains deeply. Each island possesses a rich capillary network that resembles somewhat the glomerulus of the kidney.

According to Ssbolew, ligation of the pancreatic duct is followed by complete atrophy of the pancreatic cells proper, while those of the islands of Langerhans are not affected. Since under these conditions no glycosuria occurs, while removal of the whole organ, including the islands, is followed by pancreatic diabetes, the obvious conclusion is that the diabetes is due to the loss of the islands.

This conclusion is strengthened by reports from the pathologic side. A number of recent observers have found that in diabetes mellitus in man the islands are markedly affected, showing signs of hyaline degeneration, atrophic changes, and in severe cases may be absent altogether. Several theories have been advanced to explain the action of the internal secretion of the pancreas. It has been suggested that the secretion contains an enzyme which is necessary for the hydrolysis or oxidation of the sugar of the body and in the absence of this enzyme the sugar accumulates in the blood and is drained off through the kidneys. Other investigators adopt an entirely different view of the relation of the pancreas to carbohydrate metabolism. They believe that the internal secretion of the pancreas regulates in some way the output of sugar from the liver (and also from the other sugar-producing organs). In the absence of this secretion the liver gives off its glycogen as sugar too rapidly, the sugar content of the

blood is thereby increased above the normal, causing a hyperglycemia, and the excess passes out in the urine.

Diabetes mellitus is due to excessive irritability of the test-organ and to the presence in the blood of waste-products, stimulating drugs, poisons, toxins, etc., which cause this organ to react inordinately owing to its over-sensitive condition. By thus provoking an excessive production of adrenal secretion, these agents excite hyperoxygenation of all organs, including the pancreas. As the islands of Langerhans supply an amylolytic ferment, which on reaching the muscles, through the intermediary of the leukocytes, and the liver by way of the splenic vein, converts the glycogen of all these organs into sugar, a larger quantity of the latter is produced than usual and the excess is promptly excreted by the kidneys. Hence an increase of sugar in the urine above the normal ration is proportionate to the degree of hyperactivity of the adrenal system.

We owe to Mehring and Minkowski the view that the pancreas produces an internal secretion which governs the carbohydrate metabolism, and to Laguesse the demonstration that the islands of Langerhans are the source of this secretion; both of which conclusions have been sustained by Schaefer and others in independent researches. The internal secretion referred to above only means according to current views the substance secreted by the islands of Langerhans as distinguished from the pancreatic juice secreted externally; i. e., in the intestinal tract.

Now, how does this ferment reach the liver? It passes out of the pancreas with its venous blood into the splenic vein. Here it meets with the internal secretion of the spleen (to which reference will be made later) which renders it active, and then passes into the portal system, where it converts the glycogen into sugar. That it is carried to the splenic vein not only affords the natural path for the internal secretion to the liver, but it also explains why ligation of the pancreatic duct, while causing a diffuse atrophy of the rest of the pancreatic parenchyma, leaves the islands of Langerhans practically unharmed, thus showing that their functions are not arrested. Moreover, experiments by Ssbolew show that the islands of Langerhans persisted even after the vital action of the gland ceased, and moreover, atrophy of the glandular elements did not modify the carbohydrate metabolism. It only became impaired when the entire gland, that is, including the islands of Langerhans, had been extirpated. And conversely, glycosuria is arrested by ligating the veins of the pancreas which open into the mesenteric and splenic veins, and this result proves quite conclusively that it is through its veins that the internal secretion which provokes glycosuria enters the circulation and through it the liver.

The pathologic changes in the pancreas, which bears the brunt of the morbid changes, occur late. At first it is merely overworked but is able to meet the stress placed on it; and glycosuria cannot primarily therefore be attributed to disease of the pancreas (that is, in this form of diabetes in question, the so-called sthenic type as distinguished from the asthenic type which will be spoken of later). After a more or less prolonged period of overwork, however, this organ begins to show morbid changes, though

previously and notwithstanding the presence of considerable sugar in the urine and all the typical symptoms of diabetes, it had shown none whatever. The general trend of the pathologic process is a general degeneration of the pancreas, but more particularly the islands of Langerhans, as regards glycosuria. Aside from a general engorgement of the capillaries, which may be sufficiently marked in advanced cases to be accompanied by hemorrhage, especially in the islands of Langerhans since here the walls of the capillaries are very thin, the capillary walls undergo a hyaline degeneration which gradually invades the islands and destroys them. In some cases these structures become granular and undergo necrobiosis. Both these morbid processes may proceed to an advanced stage in the islands without involving the rest of the gland, or the latter may undergo atrophy and be replaced by fatty tissue. The islands of Langerhans are the structures which yield first under the excessive stimulation to which the pancreas may be subjected. Thus in a case of diabetes the case may proceed even to a fatal termination and post mortem may show a gradual degeneration of the islands and the other glandular elements be found normal. On the other hand these glandular elements may be profoundly diseased and still no glycosuria occurs. This appears to prove that the diseases of the pancreas do not cause the diabetes, as believed by many, and that the pancreatic lesions are due to overstimulation of this organ. This work has been further pointed out by E. L. Opie (writing in the *Journal of Experimental Medicine*). He not only points out that extensive lesions of the ordinary secretory structures, not involving the islands of Langerhans, are attended by diabetes, but also that destruction of the islands of Langerhans alone concurred with the disease. This association of diabetes mellitus affords convincing proof that the islands of Langerhans are intimately connected with the glyco-genic metabolism.

The Spleen.—Inasmuch as there is at the present time considerable evidence in favor of the view that the pancreas and spleen are functionally associated, it might be well at this point to consider the internal secretion of the spleen. That the spleen has an internal secretion is a hypothesis advanced by Schiff and sustained and defended by Herzen, Lepine and others. They are of the opinion that the spleen supplies a ferment, a nucleo-proteid derived from broken down leukocytes which, when added to the pancreatic juice, greatly increases its digestive energy. Schiff believed that the splenic substance played an important rôle in the genesis of the pancreatic proteolytic ferment, but Herzen attributed to it the function of converting the trypsinogen of the pancreatic juice into trypsin, the albumin-solving constituent of the pancreatic juice. But this matter has been more recently studied experimentally by Gachet, who believes, as was previously suggested by Laguesse and Schafer, that the spleen furnishes a true internal secretion which possesses a special affinity for the pancreas, the pro-trypsin of which it transforms into trypsin. This substance loses its properties at the boiling point and when in aqueous solution is precipitated by alcohol and is therefore of the nature of a ferment.

Experiments *in vitro* and by blood analysis confirm this view. They found that a mixture of pancreas and spleen pulp in glycerin possessed far more active properties than pancreas alone similarly prepared. On the other hand, the blood of an animal deprived of its spleen proved almost inert as a tryptic, while the blood of a normal dog possessed distinct digestive powers. The anatomic relations of the organs involved, however, make it impossible for the internal secretion referred to to penetrate the circulation without first passing through the liver "with the blood of the splenic vein," which collects the pancreatic internal secretion and carries it to the portal vein. This fact seems to suggest that besides the amylolytic ferment, the portal carries to the liver a ferment calculated to insure the tryptic action on albumin bodies. From the bulk of the evidence collected there seems to be little room to doubt that apart from its hematopoietic and perhaps allied functions possessed by the spleen, the organ does furnish an internal secretion which causes in the pancreas the transformation of its inert zymogen or trypsinogen, into active trypsin.

Relation of the Islands of Langerhans to Diseases of the Liver.—In a study by Warthin and Ohlmacher with reference to the pancreas and diseases of the liver, about forty cases were examined and in none of the cases was sugar found in the urine. With but two exceptions a direct relationship could be traced between the diseased liver and enlargement of the islands of Langerhans, the enlargement being proportionate to the liver involvement. The influence of acute or chronic inflammatory processes within the pancreas, of course, were carefully excluded. It is probable that an increase in the number of islands occurs through a transformation of the acini of pancreas into these structures, as is suggested by a number of cases in which an unusual abundance of interacinar cell groups are present without an increase in the interstitial fibrous tissue, and in fact, transformation in some cases seems to be taking place. It seems likely that diseases such as cirrhosis occur in the liver prior to cirrhotic changes in the pancreas, as shown by cases in which the islands of Langerhans are greatly enlarged, the enlargement being apparently coincident with or subsequent to hepatic disease, but otherwise unaltered. In most of these cases the cells of the islands of Langerhans are far more abundant and more granular than usual. This suggests an increased activity on their part, especially since Ssbolew, by feeding dogs on carbohydrates, showed that these cells became more granular as the demands placed on them were increased. That diseases of the liver are generally accompanied by enlargement of the islands of Langerhans is probable as suggested by the findings of Ohlmacher. The enlargement of the islands seems to be a true compensatory hypertrophy. The fact that the liver and the islands of Langerhans have been shown to possess properties which aid in governing carbohydrate metabolism suggests that limitation of this function in the liver is being compensated by an enlargement of these islands.

Two theories have been advanced concerning the *modus operandi* of this phenomenon. One assumes the elaboration of a glycolytic ferment by the islands of Langerhans, which entering the blood causes the oxidation of the sugar in excess of the normal amount. With an increase of the sugar content of the blood, resulting from hepatic disease, additional responsibility is placed on the islands of Langerhans to maintain the normal sugar balance. These structures, if healthy, in accordance with the additional demands placed on them undergo hypertrophy. If they respond promptly, untoward results are avoided; but if on the contrary anything prevents their assuming this additional responsibility, such for instance as would likely occur if their growth were impeded by an abnormal amount of fibrous tissue within or about them, we might expect a glycosuria. Another theory is suggested by Herter and Wakeman, who made experiments with adrenalin chlorid and similar substances producing a glycosuria. It was found that when weak solutions of adrenalin chlorid, potassium cyanid, etc., were painted on the surface of the pancreas, glycosuria resulted. In their experiments the hepatic glycogen was more rapidly converted into sugar. It seemed reasonable that the secretion of the islands of Langerhans exerted an inhibitory influence on the cells of the liver, possibly also on the muscles, preventing them from too rapidly converting the glycogen into sugar, and that the action of the adrenalin chlorid is just the opposite; i. e., augmenting glycogen conversion. In the Herter-Wakeman experiments the substances painted on the pancreas may have in some way neutralized the secretion from the islands of Langerhans, thus temporarily destroying its inhibitory influence on the glyceogenic conversion.

This theory may be applied to man by assuming that the normal secretion of the adrenal gland and that of the islands of Langerhans are diametrically opposed, or at least to a certain extent antagonistic in their action, and that the secretion of the adrenal gland controls the inhibitory influence exerted by the secretion of the islands of Langerhans on the liver cells in their conversion of glycogen into sugar. In other words, substances from these structures in normal amounts act on each other in such a way as to establish a balance or equilibrium in the carbohydrate metabolism. And it is on this basis that the relation of the hypertrophy of the islands of Langerhans in diseases of the liver are explained.

Two theories also have arisen concerning the rôle of the liver in causing glycosuria. One supposes a depressed glyceogenic function in the liver; that is, that the liver cells are unable to convert the digestive sugar (dextrose and levulose) brought to them by the portal blood, into glycogen, and hence in consequence the sugar accumulates in the blood (hyperglycemia) in greater quantity than can be made use of by the tissues, and is thrown off by the kidneys as waste. The other theory supposes the inability on the part of the liver cells to properly retain the sugars after they have been formed into glycogen; that is, that the glycogen is changed too rapidly into dextrose and levulose for the body's use and is therefore thrown out into the blood stream.

Asthenic Glycosuria.—Asthenic glycosuria is that form which is due to poisons, diseases, trauma, shock, fright and other conditions which depress the functional activity of the adreno-thyroid and sympathetic centers of the pituitary body, and therefore the functional activity of all organs, thus including the pancreas. The secretory function of the pancreas being inhibited, the formation of glycogen is correspondingly reduced, and the food carbohydrates which should be utilized in this function are directly converted into sugar in the alimentary canal and absorbed as such. Being unsuited for utilization by the tissues, this sugar is eliminated by the kidneys.

The disorders which provoke asthenic glycosuria include those which greatly depress the functional activity of the organs of the adrenal system, or those of the vascular centers, i. e., the sympathetic and the vasomotor. The oxygenation of the blood, or the access of the blood to the various organs being impaired, their function and nutrition are correspondingly inhibited. The pancreas being included among the organs thus affected, its output of ferment, amylase, is greatly diminished. The pancreas is reduced therefore, as far as its functions are concerned, to the condition which prevails in diabetes mellitus. While in the latter disease the pancreas is destroyed organically through excessive intrinsic metabolism in asthenic glycosuria it may be only functionally paralyzed owing to inadequate oxygenation and local hypometabolism. The sugar originates, therefore, as may be the case in advanced diabetes, directly from the sugar ingested or from the food starches, the conversion occurring in the alimentary canal. This sugar, being taken up by the digestive leukocytes, is unloaded by these cells in the intercellular spaces, but being in excess of the body needs, the surplus is carried by the lymph stream to the blood and then excreted in the urine. It is in this form of glycosuria that the pancreas is often free from lesions post mortem. In cases of relatively prolonged duration the organ presents all the evidences of atrophy.

TREATMENT OF COMPOUND FRACTURES *

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The term compound fractures is used for those fractures in which the rupture of the tissues from the skin or mucous membrane extends clear down to the broken parts of the bone. Their treatment differs materially from the treatment of other fractures, because they are exposed to complications to which the others are not.

It is necessary to state from the beginning that no certain rule for all cases of this class can be laid down. Each case must be treated individually. The importance of compound fractures lies in the fact that

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they may not only entail loss of function or deformity but the loss of life, and to this fact the surgeon must pay attention in the first place. The treatment will differ materially, according to the fact, whether the patient has come directly from his injury into the hands of the surgeon, or whether he has been handled a good deal by inexperienced hands or laymen, since in this manipulation lies a great deal of danger of infection. Private and country practice will also differ a great deal from hospital practice.

In dealing with the individual case the first in aim is to decide whether a fractured limb can be saved without sacrificing the life of the patient; second, whether the active treatment is preferable to the expectant treatment. The best rule for the surgeon is to regard every case as contaminated unless he is positive that such is not the case. A good deal of the success of the surgeon in dealing with compound fractures depends on the manipulation of the case when it first comes into his hands, not the least part being the way he handles the injured parts; at this time hemorrhage must be looked after first and temporary hemostasis by compressive method is usually applied by laymen, to prevent fatal initial hemorrhage. The main danger after this is in the infection. Therefore it will be necessary to remove the patient at first into a place where infection can be avoided. Since the hospital is better fitted for such a service than the private home, compound fractures ought to be brought into a hospital if possible. A competent surgeon should take care of it; I say advisedly a competent surgeon who knows all the details of modern asepsis, since there are a great number of general practitioners who do not regard these cases as too difficult to be handled by them. But it is easier to perform on a healthy person with healthy skin any kind of operation than it is to treat aseptically a compound fracture. A great danger is in the so-called polypragmasia, that means in plain English, doing too much. The surgical busybody, with his brush and soap in his hands, has killed more patients with compound fractures than most of the dirt brought into them during the injury.

Let me describe to you how it is usually done by those who have not much experience, and how it should not be done. Let us take an example of a compound fracture of the femur, in which the outer parts are injured severely and in which the bone protrudes through the skin. Mud and dirt from the street is sticking to the injured part. The first to do is to get a basin of water and soap, lather those parts and scrub them with a brush until they appear to the layman or the surgical tyro clean. During this manipulation most of the damage has been done. The parts which have been only apparently dirty by clinging of particles of mud to them are now thoroughly rubbed in with the micro-organism, and what is more they have been irreparably damaged. No amount of bichlorid or carbolic acid will wash off those micro-organisms which have been rubbed into the parts. No matter how much iodoform gauze or other kind of gauze has been placed on top of the wound, and how much cotton and how carefully it has been wrapped up, fever and the other symptoms of sepsis will soon appear. This method of washing

and scrubbing has been abandoned by most of the surgeons of to-day, even in the ordinary run of operations, where we have to deal with the unbroken skin. It is absolutely contra-indicated in compound fracture. Forty-eight hours, or several days afterwards, such a washing will do less harm, and if once granulations have developed on the surface one could even take cultures and bring them in close contact with the surfaces which are covered with those granulations and the patient will suffer no harm from it.

The modern method of treatment is the same which we use now universally in preparation of our patients. Sealing of the parts which are exposed to the contamination after removing mechanically and carefully from the surface of the damaged part all the particles which can easily mechanically be removed, we paint the skin and the damaged part with iodine, according to the method of Grossich. We remove all those parts which have been so heavily damaged that in all probability they will not recover life by their own circulation or by adhering to parts which are still living. We open all the recesses which may harbor infection, drain them and then wait for Nature to throw up a wall of defense. The first indication, therefore, is to keep out all infection if possible. Of course all other principles of common modern surgery, like the exact hemostasis, have to be observed.

To bring about the functional and cosmetic result as we would like to have it in an uncomplicated fracture will be of secondary consideration. Too much handling of the patient, and particularly of the injured part, is also forbidden by the shock commonly present during this time, and should be reserved for a later time when the patient has recovered from the same.

In some of the cases of compound fracture one particular kind of infection is to be feared and has to be prevented if possible, namely, tetanus (lockjaw). In all those fractures which are contaminated with earth or dirt, and in gunshot wounds, a prophylactic injection of anti-tetanic serum ought to be given at once.

Only a second consideration is the restoration of function. Of course it can be taken care of right in the beginning if it is possible; if not, however, the care for life comes first. And if the consideration for the life requires an amputation, such should be done but not too rashly, since it is surprising how much Nature can recover after a damage.

As I said in the beginning, no strict rules for the treatment can be given, but only in general the treatments can be outlined. As a rule, it will be favored to wait with the active surgical interference until shock and the dangers of immediate infections have disappeared, but some compound fractures require immediate surgical interference.

Take for instance the compound fracture of the skull. In many instances a thorough surgical operation is the only thing which will keep a patient of this class alive. Again there will be a large group of fractures of the skull which will be *noli-me-tangere* for the surgeon, since every interference will only add danger of infection. Individual-

ization is the only way in the treatment of compound fracture. How much harm too much manipulation can do is best seen in one kind of compound fracture in which infection is hardly avoidable. I mean the fracture of the jaw. There is hardly any fracture of the lower jaw which is not compound that is not communicating with the mouth cavity. In the mouth there are any number of micro-organisms and it is hardly possible for such a fracture to remain without contamination. But left alone in most cases, there will be no serious complication. The worst that will happen will be a non-union in a bad position and an abscess or sequestration of parts of the jaw which have lost their vitality, but this from such a fracture is rare. In a recent clinic I have been able to show four cases of fractures of this kind. Nothing had been done in any of them, all have been complicated by some suppuration, but in none of them the result was bad because nothing had been done primarily. But if such a fracture is meddled with very much in the beginning very serious results may happen.

A very old well-known and experienced surgeon of our city used to express this principle very truly when asked how he treats compound fractures by saying, "I treat them with chamomile tea." After the dangers of immediate infection and sepsis have passed the compound fractures will have to be treated like those uncomplicated with a view of obtaining the best possible function and the least deformity.

Any of these methods which have been described and which are discussed to-night much more in detail by others will be applicable. Wiring, the use of Lane plates, ivory pegs and fresh bone taken from other parts of the body and used in Germany, an operation called Bolzen-operation and other methods. It is preferable, however, since a sepsis cannot be perfect in the treatment of such compound fractures, to use foreign bodies like plate and metal as little as possible unless one has taken in consideration to take it out afterwards, when functional result and little deformity has been obtained. This seems to be the consensus in regard to the treatment of compound fracture among modern surgeons. In a recent meeting of surgeons at Buda-Pest in which fractures were discussed by a large number of experienced men, views similar to these have been expressed by most of the men. If I should like to emphasize in a few words the treatment of compound fractures it should be governed by one principle, namely, do not try to do too much in the beginning and try to do as little harm as possible.

RUPTURE OF THE PARTURIENT UTERUS *

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With the exception of eclampsia and puerperal sepsis, rupture of the uterus constitutes one of the most formidable accidents possible in the lying-in room. Despite the great maternal and fetal mortality associated with this event, it was not until the time of Guillemeau (1550-1613) that the accident was first described in the literature. From this author to the appearance of Bandl's classical description but little was written on the subject; de la Motte, Baudelocque, Levret and Michaelis being the chief contributors.

Bandl's work, appearing in 1875, not only called attention to the importance of uterine rupture but it contained such a graphic and accurate description of the factors concerned in its production that its tenets have been universally accepted by the leading authorities to this day.

Bandl recognized two distinct portions of the parturient uterus, a contracting segment and a dilating portion. These segments were divided by the palpable ridge called Bandl's ring and this ring was first supposed by him to be derived from the internal os uteri. During labor, the uterine body not only increases in thickness but rises in the abdomen until the round ligaments become tender and tense and by means of these muscular bands, the parametrium and abdominal pressure, the upper uterine pole becomes fixed and incapable of further ascension. The presenting part of the fetus meets an abnormal resistance either from the cervix itself or the pelvic inlet. In the latter case, the cervix is caught between the pelvis and head and becomes fixed as in a vise. Intra-uterine pressure, aided by the force of the abdominal muscles, over-distends the lower uterine segment. The fetus is forced more and more below Bandl's ring until the thinned uterine musculature yields and rupture takes place. The three most frequent obstacles to delivery were stated to be pelvic deformity, hydrocephalus and shoulder presentations.

It is a matter of common knowledge that Bandl ruptures are frequently observed. Sixty per cent. of late ruptures are associated with pelvic deformity and 8 per cent. with hydrocephalus and malpresentations.

Fixation of the lower uterine pole may be secured in the absence of pelvic contraction. Rigidity of the cervix from stenosis, cicatricial contraction, carcinoma or fibroma have been observed. The counter-pressure of the presenting part against the unyielding cervical tissues produces a condition of fixation sufficient to cause uterine rupture. In these cases one finds excessive stretching of the anterior uterine wall.

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Freund was unable to agree with Bandl in his statement that the round ligaments were strong enough to fix the upper uterine pole and cited examples where the fundus has ascended to the diaphragm from a full bladder or post delivery tympani uteri. The former author believes that the main structures producing fixation are the parametrium and vagina. The latter structure when distended pulls on its pelvic attachments. The vagina is capable of marked distention, however, before traction is made on its osseous attachments. Distention of the vaginal tissues is met with in hydrocephalus and malpresentations associated with a pendulous abdomen. The posterior vaginal wall is excessively stretched and its tears extend into the lower uterine segment.

The frequent occurrence of uterine rupture without Bandl's three factors led to a closer examination of the uterine muscle itself and in many cases it was found that uterine pathology was an important factor in rupture. A rather common finding is fatty degeneration, white-celled infiltration and atrophy of the muscular fibers and edema of the connective tissues in elderly patients or in those who have borne many children.

Traumatism of the uterine wall invariably leads to scar tissue and thus produces a distinct locus resistentiæ minoris. Von Franque has shown that following overdistention and compression of the lower uterine segment in a former labor but without rupture there is a certain degree of muscular atrophy and regeneration by scar tissue and the tendency to spontaneous rupture in future labors is increased.

Various operations on the uterus as myomectomy, excision of a wedge-shaped piece of the wall in salpingectomy or to correct displacements, operations on the cervix, curettage and Cæsarian section weaken the uterine wall perceptibly. Any woman who has been delivered by Cæsarean section in a former labor should be delivered by laparotomy in every case when the indication for the primary operation was pelvic contraction. A Cæsarean woman should not be required to overcome any material resistance because of the great danger of rupture of the scar.

The great danger of manual removal of the placenta is well recognized. It is difficult to extract the placenta without removing some uterine wall or at least injuring it to such a degree that scar tissue develops in the placental site. An important lesson will have been learned when the physician regards this procedure as one of the most dangerous of the obstetric operations and resorts to it only under positive indications.

Rupture of the uterus occurs during various obstetric operations—more especially in late versions. The ability to determine the feasibility of version late in labor demands the highest judgment and experience. Only those who are skilled in intra-uterine manipulation are qualified to determine the limits of version.

Uterine rupture must be kept in mind in all operative deliveries, in abruptio placentæ and placenta prævia and in *all* these cases a careful intra-uterine exploration should be adopted as a routine procedure.

In general we may say that the lower uterine segment ruptures when the contraction ring occupies a high position in the abdomen, when the

parametrial tissues are markedly stretched and (1) the cervix is caught between the head and pelvic inlet, or (2) when the lower uterine pole including the parametrium is fixed by the head, or (3) when the external os uteri is rigid and its tissues are unyielding, or (4) when the uterine walls are diseased.

Rupture of the uterine body is rare and occurs during pregnancy or in the first stage of labor. The arrangement of the muscular fibers, the thickness and strength of its walls are amply protective. As the fundus thickens during labor, late rupture is the exception in healthy tissues. Tears of the lower uterine segment are stopped by Bandl's ring.

The direction of the tear depends on the violence offered or the resistance present. In downward traction on the lower uterine segment as in forceps or extraction by the breech, the tear is longitudinal. The rupture may, however, run obliquely or transversely and involve any portion of the lower uterine segment. The left and anterior walls are more exposed to pressure and violence and rupture is common in these places. The laceration varies in degree from fissures to gaping tears. The edges are irregular, and jagged and thinned. The adjacent musculature shows bloody infiltration, thrombosis in the blood-vessels and edema is present in the more distant parts. The peritoneum is raised by small or extensive hematmata or collections of air when the rupture is lateral. The firm connection between peritoneum and uterus on the anterior and posterior wall prevent any separation of its layers. If the rupture extends beyond the uterine tissues, the parametrium, bladder and rarely the rectum may be injured.

Two varieties of incomplete rupture are recognized: rupture of the lateral wall into the folds of the broad ligament but not involving the peritoneum and the so-called peritoneal fissures of Säger. The folds of the broad ligament are separated by a portion of the fetus or accumulations of blood. The hemorrhage may extend in the subserous tissues to the iliac fossæ or between the bladder and uterus to the anterior abdominal wall. The blood may also dissect its way in the retroperitoneal tissues and reach the kidneys. Emphysema of the tissues may be associated with bleeding. The air is introduced into the body by internal examinations, operative deliveries and douches or by infection of the uterine contents with gas bacilli. In the latter case the prognosis is nearly hopeless.

Peritoneal fissures are found on the anterior or posterior wall where the serous covering is firmly adherent. It follows excessive distention of the uterine body as in hydramnion, tympani uteri and premature separation of the normally implanted placenta. Death is due to hemorrhage or peritonitis from the effused blood. The amount of bleeding depends on the location of the tear and the degree of compression made by the fetal body on the torn vessels. If the head or breech is forced into the rent, hemorrhage may be arrested completely until the child is delivered. The scanty vascular supply of the lower uterine segment, the jagged character of the tear and the muscular retraction that takes place after rupture naturally prevents a considerable loss of blood unless the

tear involves the placental site, as in placenta prævia, when the hemorrhage may be fatal. Lacerations extending into and involving the vascular tissues of the parametrium are noted for their bleeding. If the rupture is incomplete, hematoma formation will be limited by the peritoneum and the degree of external bleeding. If the peritoneum gives way, a fatal bleeding is relatively common.

The uterine contents, consisting of liquor amnii, placenta and fetus may be expelled more or less into the peritoneal cavity. If the bladder is ruptured, urine may escape and set up a fatal peritonitis.

It is of the greatest practical importance to be able to recognize the signs and symptoms of threatened uterine rupture, as the proper treatment at this time is most effectual. When the powers of labor are unable to overcome the resistance, the uterine contractions become more frequent, more violent and of longer duration. The interval is accordingly shortened. Bandl's contraction ring gradually rises in the abdomen until it reaches the level of the navel, carrying with it the upper border of the lower uterine segment. The continuance of the intra-uterine pressure or a sudden increase of pressure produces a tear.

Inspection of the abdomen in threatened rupture shows the characteristic lengthening of the uterine axis. In certain cases, where there is profuse intra-abdominal bleeding or marked tympany, the abdomen becomes rounded and full and palpation is so painful that it is difficult to outline the various parts. The fundus is often found pressed under the liver. Below the hypogastrium overlaps the os pubis. Bandl's ring is seen as a furrow lying obliquely across the abdomen. If the bladder is full, the urine should be withdrawn before a diagnosis is made. The round ligaments are found to be tense and painful on pressure. The left ligament is tightly stretched in right uterine obliquity. The thick fundal walls and the thinned lower uterine segment are pathognomonic. Through the lower uterine segment it is often possible to palpate the fetal parts with remarkable ease. The findings are somewhat similar to those when the fetus lies in the abdominal cavity. Fetal motions are rare. The long labor, the escape of liquor amnii and lessening of the placental site interfere with the placental circulation and seriously compromise the vitality of the fetus. The lower uterine segment and later the entire abdomen is extremely sensitive to pressure.

An internal examination shows either the cervix fixed by the head and inlet or the parametrium fixed and the cervix free. With fixation of the cervix, a marked edema arises which may extend to the vagina and cause partial prolapsus. Edema of the vulva or vagina is not diagnostic of threatened rupture as the condition is common in long labors. In generally contracted pelvis, the entire circumference is caught and the swollen cervix simulates an elastic tumor. The anterior and posterior lips are edematous. The greater the swelling the more difficult it becomes to release the cervix from its fixation. If the pelvis is flat, the anterior and posterior lips alone are caught. One or both may be edematous.

If the cervix is free from fixation while the posterior vaginal wall is pulled strongly upward and the abdominal findings are those of threat-

ened rupture, one would suspect fixation of the parametrium and proceed to deliver at once.

If the condition is not relieved, the patient becomes very restless, thrashes around in bed, holds the abdomen with both hands, cries in the intervals and begs for relief. Her pains differ radically from those of normal labor. The face is flushed, tongue and lips are dry, pulse frequent and respiration frequent and superficial. Fever, rarely absent, occurs from necrosis of the compressed tissues or infection of the uterine contents. Agitation or depression of the nervous centers is common. Usually, the patient does not bear down as the vaginal distention seems to lessen the irritation. Several attacks of unconsciousness may occur and are due to successive ruptures of the uterine muscle.

The rupture occurs with a pain or during some intra-uterine manipulation. The patient feels something burst in the abdomen. In the average case, collapse soon follows and immediate death if arterial bleeding is severe. External bleeding is the rule but often is slight.

The previous restlessness now changes to quiet. Signs of internal bleeding are present. The face is pale, eyes are sunken, vision is disturbed, temperature falls, rapid thready pulse, sighing respiration, cold sweating and vomiting. The pains cease unless the tear is small, is longitudinal in direction and the fetus still lies in utero. The liquor amnii generally escapes before rupture takes place but not always. Goldner reported nineteen cases in 1903 in which rupture was threatened before the escape of the waters. The writer was once able to postpone an actual rupture for several hours by directing the physician to rupture the membranes. The character of the pains changed immediately but after two hours the condition again became threatening. A prompt delivery saved the patient. In this case, the lower segment was greatly thinned and stretched. The placenta often falls into the lower uterine segment or vagina. In exceptional cases, it is forced into the peritoneal cavity.

The diagnosis of complete rupture of the uterus is made from the following points in the order of their importance:

1. The palpation of a portion of or the entire fetal body in the peritoneal cavity. As the head or shoulders generally escape, they may be felt as a tumor mass adjoining the uterine body which is pushed to one side. If the entire body is expelled, it may be felt with great ease beneath the abdominal wall while the uterine fundus is small and contracted. The discovery of a second tumor-like mass in the abdomen is of the greatest importance.

2. Recession of the presenting part. This sign is absent if the head is fixed in the pelvis before the time of rupture. The examiner finds that the head not only has receded but in some cases cannot be palpated. This sudden recession when occurring in obstructed labor can be due to no other condition than rupture.

3. It is often possible to palpate the lower angle of the tear while the fetus is in utero; whereas, if the fetus has escaped or has been delivered, the internal hand can accurately determine the presence of, location, extent and complications of the rupture. Prolapse of omentum or intestines into the vagina clinches the diagnosis.

4. Hemorrhage and collapse. Collapse is dependent primarily on hemorrhage. The hemorrhage in rupture depends on the location and extent of the tear. The writer has seen several cases of rupture where collapse set in several days after the accident from sepsis. The fetal body had compressed the vessels until the thrombi were firm. In three such cases, the women lost less than 6 ounces of blood.

In incomplete rupture, two signs are characteristic when following the condition of threatened rupture:

1. Hematoma beginning in the parametrium at the side of the uterus and extending in front to the bladder or anterior abdominal wall or along the rectum to the kidneys.

2. Emphysema extending from the seat of rupture and spreading to the anterior abdominal wall. Dischler collected fourteen such cases. This condition is rare.

An absolute diagnosis can be made by an internal examination after delivery. Care must be taken, however, not to mistake the outer surface of the peritoneum for the velvety feel of the intestines. The presence of fibrous or muscular tissue adhering to the peritoneum aids in the decision. Care must also be taken to avoid rupturing the delicate covering and producing a complete rupture.

A diagnosis of uterine rupture in the atypical cases is more difficult. When the uterine tissues have become diseased and filled with scar tissue, rupture may occur without warning or premonitory symptoms. The appearance of sudden and profuse hemorrhage followed by collapse should lead to a correct diagnosis. In other cases, the onset of peritonitis calls attention to the etiologic rupture. With a knowledge of the former obstetrical and gynecologic history of the patient, with a careful supervision of the patient during labor, with delivery when any suspicious symptoms arise and a careful exploration of the uterine interior in all suspected cases, few atypical ruptures will escape our notice.

The prognosis depends on the variety and extent of uterine injury, the amount of bleeding, the probability of infection, the strength of the patient and the therapy instituted. Incomplete ruptures are less fatal than the complete tears. If the labor has been conducted under aseptic precautions, the outlook is better than when suspicious examinations or unskilful operations have been attempted.

From the time of Denman, who stated that "when the uterus ruptured at the time of labor, both reason and experience show that the patient has a better chance of recovering by resigning the case to the natural efforts of the constitution than by any operation or interposition of art," and who consequently lost nearly all of his patients, to the present time, the prognosis has steadily improved. Cases of rupture from Bandl's factors are becoming less frequent as the physician is beginning to pay more attention to his obstetric patients and is enabled to save them from the dangers of protracted labor. On the other hand, the prevalence of Cesarean section, curettements, manual removal of the placenta and other similar operations increase the number of uterine ruptures from scar formation or disease of the myometrium. The mortality tables reported by various authors vary. Schultze in 193 cases of complete rupture

states that 20.2 per cent. recovered without treatment, 36 per cent. after drainage and 44.7 per cent. after laparotomy. Ivanoff reported 124 cases with a mortality of 81.75 per cent. All were treated by plugging and the abdominal binder. Merz in a study of 230 cases found a mortality of 62 per cent. Klein gives 56 per cent. of recoveries by operative methods. Schmidt reports eighty-three cases treated by packing with a mortality of 43 per cent. and thirty-two cases by laparotomy with a mortality of 75 per cent. Dorland reports ten cases treated by suture with one death.

Death from hemorrhage occurs within the first forty-eight hours; in infection, the termination occurs after several days. The child usually dies from asphyxia before the onset of rupture. If alive at the time, it perishes in a few minutes unless delivered at once.

The treatment of uterine rupture is preeminently prophylactic. It is easier to prevent than to cure. If one side of the uterus is distended more than the other, the patient should lie on that side. The Hofmeier-Fritsch maneuver should be avoided when the head lies high in the pelvis. Walcher's position may be used to facilitate the entrance of the head into the pelvis. One should always avoid forcing a non-molded head into the inlet.

In a case of contracted pelvis, shoulder presentation, tedious labor after the waters have escaped or violent pains without descent of the head, one should watch closely for signs of threatened rupture and when they appear, he should deliver at once by (1) forceps, if the head presents and the child is alive, (2) extraction if the breech presents and child alive or dead, (3) craniotomy as a primary operation if the head presents and the child is dead or the pelvis markedly contracted; hydrocephalus; (4) Cesarean section if the pelvis is absolutely contracted; (5) decapitation in shoulder presentation. The operation of version in these cases is too dangerous.

The child's life becomes of secondary importance in threatened rupture and while every attempt may be made to save it if possible, none that entail increased intra-uterine tension should be used. The writer in two recent cases of threatened rupture associated with pelvic contraction performed pubiotomy and then delivered with high forceps. Both mothers and children recovered perfectly.

If uterine rupture has occurred before delivery, the mother must be treated in the original lying-in chamber. She should not be transported to a hospital or clinic. Most of the authorities are agreed on this point. The danger of complete rupture or its extension is too great.

If the fetus is entirely or partially within the uterine cavity, it should be removed per vaginam if the delivery is relatively easy. If bleeding is serious or long continued or the extraction difficult, the abdomen is to be opened. The safest way to stop hemorrhage is by laparotomy.

If the fetus has escaped into the peritoneal cavity, delivery is effected by laparotomy. The fetus and placenta are removed, the site of rupture inspected, the bleeding arrested by clamp or suture and the rent sutured if possible. Zweifel advises a suture of the peritoneum only, thus converting a complete into an incomplete tear. If the uterine body is septic it is removed. Hysterectomy in the private home is a dangerous proce-

ture. One should remember that amputation of the fundus avails little in hemorrhage and adds greatly to the shock.

After the fetus is extracted, the chief and immediate danger is from hemorrhage. The greatest bleeding does not come from the uterine wall but from the surrounding tissues. Wounds of the parametrium bleed more profusely than those of the uterine wall. From 12 to 15 per cent. of uterine ruptures involve the large vessels and these give rise to serious bleeding that may necessitate an abdominal section. Usually, however, the bleeding is not considerable. The torn tissues retract, the tear closes rapidly and the danger is over in one or two days. If the bleeding has ceased for a few hours and the pulse improves, the woman should be treated by absolute rest in bed, morphin, ice bags and ergot.

If bleeding persists and the tear is accessible from below, the cervix may be pulled down and the rent sewed with catgut. This is often a difficult procedure. If suturing is impracticable, the uterine tear and the entire birth canal are to be tamponed by 0.5 per cent. lysol gauze. One end of the strip is left in the peritoneal cavity and the other in the vagina. This is removed in two days or later. A well-applied tamponade combined with an efficient abdominal binder will control the greatest number of hemorrhages.

Bleeding once arrested seldom returns unless complicated by sepsis which involves the thrombi in the vessels. These secondary hemorrhages occur in incomplete ruptures or ruptures of the vaginal vault and are assisted by the negative abdominal pressure. Death is due to the sepsis which produced the hemorrhages.

The treatment of bleeding in incomplete rupture is essentially tamponade of the rent and birth canal. This gives the best results. These patients should be kept quiet by opiates, as their restlessness has produced a complete tear in two cases under my observation.

During the long tedious labor, the genital tract is often infected and through the tear the septic germs enter the peritoneal cavity and cause a peritonitis which is fatal to one-third of the patients.

At the present time we can do little to rescue the woman who is already infected with virulent bacteria. The septic uterus may be removed *in toto* but the end results are poor. We can only reduce the mortality from sepsis by prophylactic measures and by a careful anti-septic technic during the process of labor.

For the average case of uterine rupture, the following treatment is recommended:

1. Delivery of the child and placenta per vaginam.
2. If the tear is accessible from below, bring the uterus down from below and suture.
3. Pack uterus and vagina with lysol gauze.
4. Careful technic.
5. Rest in Fowler's position, morphin, ergot and ice bags.
6. If the vaginal delivery is difficult or impossible, perform laparotomy and deal with the conditions found.
7. Do not transport the patient from the place in which the rupture has occurred until several days after the accident.

THE TREATMENT OF DIFFUSE SUPPURATIVE PERITONITIS

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The treatment of this condition has in the past few years changed from palliative to curative. In no other field has more startling advance been made than in the care of suppurative infection of the peritoneum. It has not been the result particularly of laboratory investigations or logical experimental deduction but rather the force of the various clinical results from the different methods of treatment. Laboratory and experimental surgery had for the past twenty years pointed out the particular path to follow; but clinicians attacked the problem in the good old empiric way and were guided by a variation in an appalling death rate, rather than by scientific observation and conclusion. The final result, however, seems to reconcile empiricism and scientific deduction, inasmuch as the present clinical methods agree with the past experimental deductions. The last word in the treatment of diffuse suppurative peritonitis has by no means been said, for a number of experiments hold out a great variety of possible improvements in the treatment which clinical experience will accept or reject according as they influence the death rate, favorably or unfavorably. A number of these experimental suggestions have been tried with varying success, but clinicians are ever wary of innovations.

It has long been a surgical dictum to evacuate pus wherever found and all are agreed that the abdomen should be opened as soon as a diagnosis of a purulent peritonitis can be made. But that is as far as the harmony goes; and from here on the discussion waxes warm and earnest.

The Incision.—Since nearly every case of purulent peritonitis has its origin from peritoneal covered structures and since it is good surgery to deal with the source of infection, the position of the opening in the abdominal wall should depend on the diagnosis of the cause of the peritonitis. It is well to incise the abdomen as nearly as possible over the region from which the infection began. If this be impossible to determine, the median line or the margin of the right rectus muscle may be chosen as excellent points through which to explore the peritoneal cavity. The size of the cut is largely a matter of choice. Some surgeons prefer a large opening at once while others content themselves with a modest incision and enlarge it as the occasion demands.

Exploration.—On opening the abdominal cavity a variable quantity of secretion will escape. The fluid may be seropurulent or sanguinopurulent. It may be accompanied by gas having a fecal odor or it may be mixed with intestinal or gastric contents. The intestine may show moderate or great distention; it may present a shiny appearance, may be covered with a fibrinous deposit, or look red and dry. While modern surgery regards undue manipulations of the inflamed peritoneal surface as a reprehensible practice, the fact that continuous infection of the

peritoneal cavity results fatally compels the surgeon to determine and deal with the source of infection. The origin of the trouble should be found with as little manipulation as possible. In accomplishing this feat an exact and careful history of the beginning and course of the attack will often lead the operator to the organ involved. The character of the exudate will also materially assist; and perforation of a gastric ulcer may be determined at once by gastric contents in the exudate, likewise bile will betray rupture of the gall-bladder. In case the origin of the infection cannot be determined by any of the already mentioned means a systematic search in the peritoneal cavity must be made. How far one is justified in pursuing an exploration of this kind is largely an individual question, which has nevertheless certain guides for its performance. It should begin in the most frequent location of peritoneal infection and terminate with an examination of the organs least often involved. Thus, the appendiceal region should receive first attention, then the gall-bladder apparatus and ducts, the intestinal tube, the female pelvic organs, etc. The condition of the patient will determine the amount of manipulation to which the case may safely be subjected, and since the judgment of that is to a large extent uncertain, the extent of exploration that can be tolerated will be uncertain, and the results will also be mighty uncertain.

Some surgeons have feared exploration so much that they have advised simply the opening the abdominal cavity and the placing of a large drain in the wound.

Source of Infection.—When found the source of infection may be disposed of in three ways. It may be removed, as in the case of the appendix; it may be sutured, as in the case of a rupture of a gastric ulcer; or it may be drained to the outside, as in the case of a ruptured bowel. The choice of a method is again a matter of individual judgment or caprice. Many a case of purulent peritonitis originating from the appendix and succumbing after a search for, and removal of that organ would no doubt have recovered by the employment of a simple drainage without manipulation. The same may be said in regard to ruptured pus tubes. But that is a matter of judgment and it is just here that we all stumble. The disposition of the purulent secretion in the peritoneal cavity furnishes another question for discussion. It may be permitted to flow out of its own accord; it may be mopped out, or the peritoneal cavity may be flushed with copious amounts of salt solution, in that way washing the exudate away. A glance at the published results of the different methods gives such varying and contradictory stories that one is almost obliged to abandon them and search in the realm of experimental surgery for a reasonable guide. Gibbon reports eight cases with three deaths, using gauze drains without irrigation. Ross reports a series of thirty cases, washed out with plain water and closed with abdomen filled with water; twenty-six died and four recovered. He then relates a series of thirty cases treated in the same way with normal salt solution in which twenty recovered and ten died. In a later series of eleven cases nine recovered and two died. Douglas at the St. Thomas Hospital, London,

reports 100 cases treated by washing out the peritoneal cavity with salt solution of which eighty died. R. S. Fowler also reports a series of 100 cases flushed out with salt solution and states that sixty-seven succumbed. Macrae in New York reports ten cases treated by opening, removing appendix and drain, of which one died. Noetzel in Tubingen Clinic reports 241 cases treated by opening and drainage with a mortality of 50 per cent. Mayo Robson makes the statement that when diffused suppurative peritonitis cases were operated on without reference to cause they usually died. He reports six cases from appendicitis treated by the removal of the appendix, washing out with boric solution and drainage; of these one died. Torek in New York reports twenty-one cases in which the appendix was removed, the peritoneal cavity flushed out with salt solution poured from pitchers, after which the wound was closed; three deaths occurred. Morton in London reports fourteen cases, with twelve recoveries. The doctor opened the abdomen, sponged out the cavity and drained. Trendelenburg reports eighty-six cases which were washed out and drained with a 60 per cent. mortality. Murphy reports some fifty odd cases with but one death, treated by opening the abdomen, removing the appendix and draining. From these reports it may be concluded that some patients have recovered from all methods of operating and others have died regardless of the technic employed. Murphy's brilliant results argue eloquently against manipulation and washing out of the peritoneal cavity, and also agree with the experimental results. The experiments of Peiser show that the absorption of toxins is greatly increased after the injection of salt solution into the peritoneal cavity of animals previously infected with pyogenic organisms. In his experiments the animals so treated died while the controls remained alive.

Considering the subject in its broadest sense and making allowance for the clinical variations, experimental investigation and clinical result teach the avoidance as far as possible of manipulation, the removal of the source of infection if possible without excessive trauma, the closure of rents in hollow organs, and drainage as a safeguard against reinfection of the peritoneal cavity. Washing out of the peritoneal cavity is from an experimental point of view dangerous and clinically apparently unnecessary. The removal of the source of infection or its drainage to the outside is an absolute necessity.

The severe intestinal distention which one encounters from time to time has been variously dealt with. Greenough of Boston reports twenty-four cases of suppurative peritonitis accompanied by severe and persistent intestinal distention which he relieved by opening the large bowel and allowing the gas to escape through a flanged glass tube; twenty-one of these cases recovered. Some exceptionally brilliant results have been achieved by this method when the patient was in an apparently moribund condition. Von Genersich has experimentally shown that paralytic distention of the intestine proves fatal in a few days, because the bacteria and toxins pass through the walls of the gut into the peritoneal cavity, and from there on into the general circulation. If one rejects an enterostomy as the proper procedure for the relief of persistent intestinal dis-

tention. the only recourse lies in the use of enemas and cathartics; and modern surgery leans in that direction. Should an enterostomy be decided on it may be carried out in two ways. The gut may be opened and drained to the outside through a glass or rubber tube or after permitting the gas to escape and washing out the contents the incision in the bowel may be closed. Jaboulay operated on eight cases by the latter method and saved six of his cases.

Acute dilatation of the stomach occurring during peritonitis is a complication which must be recognized very early. The treatment is very simple; namely, washing the stomach through a stomach tube and keeping it empty in that way as often as the condition demands.

Drainage.—Rents in hollow organs which cannot be safely closed on account of devitalized conditions of the tissue involved, must be drained to the outside. An involved appendix which the operator considers impossible of safe removal must be drained to the outside; and the same may be said of other structures under similar conditions. It is in the absence of these contra-indications to closure that the drainage discussion arises. Hotchkiss reports eighteen cases of suppurative peritonitis in which the appendix was removed and of which ten were drained and eight were closed; all recovered. Numerous instances may be found in literature in which the abdomen has been closed while it contained a variable amount of pus and the patients made uneventful recoveries. Notzel drained his cases by inserting two or three rubber tubes and found that the drains did not communicate after the first day. This is very significant and has an important bearing on the drainage question. F. T. Murphy concludes from experiments on cats that the peritoneal cavity cannot be drained for longer than seventy-two hours. The real experimental work along this line has been done by Yates. In his experiments performed on dogs he found that adhesions had surrounded the tubes inserted into the peritoneal cavity, after twenty-four hours; and that the tubes were completely isolated from the general cavity at the end of the third day. He found that the serous discharge continued from one to two days and that it then changed to pus. As a suppurative peritonitis did not develop in the animals it was plain that the purulent discharge came from the walls of the drainage cavity. He states that neither moving the tube nor injecting fluids into it prevented the development of limiting adhesions around it. Yates found that injection of fluid into the peritoneal cavity through a tube inserted into it was impossible after the third day. Another series of experiments were made with gauze drains and protected gauze drains. Four hours after these drains were inserted the peritoneal cavity was injected with a quantity of carmine solution. It was noted that the solution escaped from both drains. In another case the solution was injected under pressure twelve hours after placing of the drain and the gauze was not even stained. Drains placed in the general cavity filled with a carmine solution did not discharge after six hours. Gauze drains into the peritoneal cavity of animals previously infected showed complete encapsulation after ten hours; the drains with smooth surfaces becoming as effectively encapsulated as those with a

rough exterior. Various authorities in the literature admit that the drainage flow ceases from the tube after twelve hours and that through and through irrigation is impossible at the end of thirty-six hours. Post-mortem investigation has frequently shown that pus pockets occur in the wall of the drainage tract, and that the continuous pus discharge did not come from the free cavity of the peritoneum. The drainage question is consequently not the settled proposition that many believe it to be, nor is it such a dependable safeguard as many would regard it to be. From the fact that the drainage tunnel is lined by necrotic material and exposed to outside infection and frequently harbors pus pockets in its wall it cannot be said to be an unmixed blessing.

In fact it may finally prove a dangerous complication in itself. The experimental evidence and the unquestioned veracity of the statements of prominent clinicians prove conclusively that drainage of the peritoneal cavity is impossible after thirty-six hours, and that its further continuation results in an encapsulated and infected drainage tract—a tract which may continue to discharge for years. The writer has operated on twelve consecutive cases of diffuse suppurative peritonitis, of appendicular origin, removing the drain in twenty-four hours. The subsequent course of these cases was uneventful with the exception of two that succumbed to pulmonary complications. Removing the drain in twenty-four hours did not influence these cases unfavorably and the ten that recovered did not suffer from a suppurating sinus nor did they remain in the hospital longer than four weeks.

Posture After Operation.—The Fowler position, from elevating the head of the bed to almost placing the patient in a sitting position, has become the popular and accepted procedure immediately after the operation and for several days or weeks following. This position undoubtedly tends to collect the exudate in the pelvic cavity where it will not be absorbed as quickly as if it were permitted to wash over the entire peritoneal membrane, and this probably saves the life of the patient in many instances. Whether or no the continuation of the Fowler position is beneficial after the second or third day is an open question; and this can only be settled by clinical observations. My own cases have never remained in that position longer than three days and I have not noticed any untoward changes from placing them in a supine position after that. Another popular form of treatment immediately following the operation and for several days after is the employment of salt solution, one teaspoonful of sodium chlorid to one pint of water. This has been employed particularly by J. B. Murphy and by him brought forcibly to the notice of the profession. According to his method the solution is permitted to run into the rectum by the gravity method in such a fashion that gas accumulating in the rectum can escape through the water. Another way consists in allowing the solution to enter the rectum by the drop method, so as to permit $1\frac{1}{2}$ to 2 pints of salt solution to flow into the rectum every hour. This may be continued for several days or as long as may appear to be required. The salt solution may also be introduced subcutaneously under the breasts or in the flanks—a quart at a time may be

permitted to flow into the cellular tissue and this procedure may be repeated several times a day. It may also be injected intravenously at a temperature of 100 to 105 degrees, in which case a quart or more of salt solution may be employed at a time. The introduction of salt solution was brought about by clinical experience rather than by experimental investigation, and has been justified by the great improvement in the clinical results. From a scientific standpoint it is entirely consistent as it no doubt dilutes the toxins in the circulation and promotes elimination through the kidneys, bowel and skin. Mechanically it should by increasing the volume of fluid in the circulation tend to inhibit the absorption of toxic products from the peritoneal cavity and in that way guard the patient against an overwhelming toxemia. The persistent vomiting present in some cases may be successfully treated by washing out the stomach through a tube and large quantities of fluid have been removed by the stomach-tube, affording relief to the patient by diminishing the intra-abdominal pressure and abstracting toxic materials. Cathartics are usually not indicated immediately after the operation on account of the paralytic condition of the bowel. They may, however, be cautiously employed after the bowel has regained some of its tone, employing in the meantime the different enemas. Pain is not usually a prominent feature in diffuse suppurative forms of peritonitis, and for its relief morphin may at times be demanded. It should be used sparingly and with great caution. The same may be said of all stimulants; and while they may be required should nevertheless be exhibited very moderately.

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INTESTINAL STRANGULATION; WITH CASE REPORTS *

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Custom has ordained that each topic presented to a medical organization shall be introduced by a long tiresome history, which seems to me useless, consuming valuable time that could be devoted to more instructive subjects. We are living in a progressive age, in which every moment of our time is valuable.

If the article is to be published, then a brief synopsis of the history might be included, but omit the reading of same before medical bodies, who place a time limit on its papers. All physicians have or have access to medical libraries where such annals can be readily secured. How many of you try to remember these long records? How many would enjoy a paper introduced by a history of circumcision or of the operation for cataract?

I shall therefore omit the history of strangulated ileus as being superfluous because medical literature is enfarced with this subject.

* Read at the Sixty-First Annual Meeting of the Illinois Medical Society, at Aurora, May 16-18, 1911.

My excuse for presenting this trite theme is its great mortality, which still obtains regardless of the wonderful progress made in surgery and medicine. Hilgenreiner's statistics show that we have made no reduction in the death rate in twenty years, and if I can say anything which may be instrumental in saving some valuable life, I shall feel amply rewarded for my feeble efforts.

I have chosen this branch of intestinal obstruction because the time allotted does not permit the handling of the full subject and because in this form of ileus, death occurs more quickly than in the other forms of obstruction unless operative relief is secured. I shall not attempt to exhaust even this division of the great subject of intestinal obstruction, but will present a few random thoughts gleaned from the field of experience, by one who is forced to rely solely on his own judgment in every exigency of emergency surgery.

Strangulated ileus not only causes stasis of intestinal contents but a serious interference with the circulation in the segment involved. Therefore, early diagnosis and the consequent treatment is of greatest importance. In other forms of obstruction, we may wait and study the case a day or so, without seriously jeopardizing the patient's life, but in strangulation hours mean a great deal to the patient. The question arises, how are we to recognize the trouble and how are we to differentiate from other forms of obstruction?

Intestinal strangulation naturally includes the various strangulated hernias, but in my remarks, I purposely omit the several external visible hernias.

The causes of strangulation are: a long narrow mesentery; adherent appendix or Meckel's diverticulum; the gut entering the internal hernia orifices or fossa, such as the foramen of Winslow and Treitz' fossa; pericecal peritoneal pouches and the intersigmoid fossa; peritoneal inflammations and abdominal operations which cause adhesions and bands to form; injuries, slits in broad ligament and suspensory ligament of liver; congenital openings in mesentery or omentum.

Strangulation ileus is more common in the small than large gut, owing to its greater length, mobility, the relation of the ileum to Meckel's diverticulum, appendix and hernial orifices. It is also more subject to inflammatory and adhesive processes. Of course, volvulus is more common in the sigmoid than elsewhere along the intestinal tract. The strangulated coil rapidly distends and remains fixed at one point in the abdomen. The symptoms of strangulation are those of obstruction, but in a more violent form. The pain, when obstruction is complete and the loop long, is agonizing and of an unbearable nature, increased by manipulation, taking food or physic or anything which increases peristaltic action; it is continuous, but has exacerbations, and its situation in the abdomen is not important as a diagnostic help. It decreases after gangrene develops and nerve centers become numbed or blunted by the absorption of toxins. Sometimes a history of former colicky pains can be secured. At the time of onset of pain or a short time afterward, the patient vomits, first the contents of the stomach, then bile if the lesion is below the duodenum.

and later as the vomiting continues, it becomes foul and offensive, and finally large quantities are ejected spontaneously.

Distention often occurs in a few hours unless the obstruction is near the stomach, but I have seen in several muscular cases but little external evidence of distention, even where the ileum was involved near ileocecal valve and on the second day.

At the onset, there is often a desire to stool and the bowels below the point of obstruction may move, then obstinate constipation follows.

Rigidity and tenderness are as a rule not present in the beginning, but the pain is increased by palpation. In thin walled patients where the peristaltic wave can be seen, there is no evidence of it in the loop involved. An important symptom obtained by auscultation is a gurgling sound increasing in volume as it approaches the obstruction, ending in a sound resembling a splash when it reaches the part involved.

Another symptom, which I regard as important and which I have found in a majority of my cases, is a succussion sound elicited by placing the thenar surface of the hands on either pole of the abdomen and by sudden pressure and slight movement toward the center of the abdomen, the churning sound can easily be heard, caused by agitation of the fluid in the proximal loop. At times it is more readily found by placing the hands on the sides of the abdomen. We must know that the stomach is empty. Taken with corroborative symptoms, it is fairly reliable.

As a rule there is no fever unless the patient is seen late after peritonitis has developed and which obscures all other local symptoms.

The urine is scant, and the blood count is usually negative as a diagnostic aid.

The patient appears very sick from the beginning: prostration and collapse occur early and are out of proportion to the other symptoms observed.

It is important to make a differential diagnosis: from fecal impaction, by recognizing a tumor in which indentations remain, history of preceding constipation, gradual onset and by proctoscopy. From torsion of tumor pedicle, by absence of peristaltic wave or sound and presence of tumor. From acute pancreatitis, by temperature and Cammidge reaction. From the various gall-stone troubles, by history, location of tenderness and character of pain. From acute renal lesions, by the examination of urine, by cystoscopy, tenderness over renal zone on first percussion as described by Dr. Murphy.

Other abdominal conditions closely resembling strangulated ileus need not be differentiated, as they require an operation, and the earlier it is performed the better are the chances of the patient.

Treatment.—In the treatment of all surgical cases it should be our rule and guide to put ourselves in the patient's place, to exercise the same painstaking care that we would wish were we on the operating table. I believe most surgeons attempt too much in the operation for the relief of strangulated ileus, the abdomen is left open too long and the viscera are handled too much. Not long ago, while attending a surgeon's club, one of our guests was a famous surgeon from Boston who delivered a discourse

on intestinal obstruction. In speaking of the treatment, he said, after relieving the cause of obstruction, he strongly advocated slitting the gut and passing a glass tube into the lumen and lacing the intestine on the tube, until it was full; then cut another hole and repeat until all the gut proximal to the obstruction was relieved of their contents. Theoretically, this looks beautiful, but I asked him what percentage of mortality he had following this operation and he answered 50 to 60 per cent. I was only surprised that it was not greater. Think of the time required, the exposure, chances of infection and the handling of the intestines involved in such a procedure. Gentlemen, if any of you desire your intestines stripped on a rod, it is your privilege; but please excuse me.

If I am called early to see a patient suffering with symptoms of strangulation ileus, I first give just enough anodyne to make the pain tolerable, then 2 ounces of castor oil followed in a few hours by enema; one of the best is a pint of crude petroleum. If results are not satisfactory, and after eliminating, if possible, the conditions mentioned above, which do not require an operation, I at once open the abdomen. The incision should be made over the point of greatest tenderness, at the termination of the peristaltic splash, through one of the recti muscles.

The collapsed intestine is found near the ileocecal valve, rapidly run through the fingers to the point of obstruction, which should be handled with the greatest gentleness. The cause of obstruction is removed, if the circulation in the bowel segment is questionable, it is returned to the abdomen and the wound margins allowed to close, temporarily. After waiting a few minutes to give the natural heat of the body a chance to restore circulation and color, the segment involved is examined again and if there is no evidence of circulatory restoration a resection is rapidly made. I prefer the end-to-end method, because I believe the movement of the bowel contents takes place more rapidly by this method than by the lateral method, and I regard this an important point. The intestines should be retained in the abdomen as much as possible during the operation, and should be handled as little as possible, and as few lap sponges used as is consistent with good work. Get in and out quickly. The patient should be placed in a warm bed, between blankets. Salt solution containing strong coffee should be given per rectum, eserine hypodermatically and laxatives as soon as the stomach will retain them, unless there has been a resection.

The internist usually sees these patients first and I would earnestly urge him to have an early exploratory operation when there is the least doubt. The slogan "when in doubt operate" never applied more forcibly than in this class of cases. There are more patients killed according to the number of cases by neglect of an early diagnosis and fear of an early operation in strangulated ileus than in any other common surgical disorder within my knowledge. An exploratory incision in competent hands is devoid of danger and it would be better to open a few and find no obstruction than to wait until a positive diagnosis can be made and be too late to save a life. Do not wait to move the patient to the hospital if time can be saved by having the surgeon operate at home, which according to my experience can be safely done.

With your kind permission I desire to report the following cases which illustrate two of the forms of strangulation and present some interesting features.

Mr. R. T., aged 30 years; weight 135 pounds. I saw him on the second day after onset of acute abdominal pain and obtained the following history:

When a boy, aged 15, a horse which he was riding fell upon him, the saddle striking the abdomen. He was very sick for a long time, but finally recovered his usual strength and health. Following this injury, he had at infrequent intervals, severe pain in the abdomen with vomiting, requiring morphin to relieve him.

At the time I saw him, he was profoundly prostrated, had remittent pains notwithstanding the morphin he had taken, and I found very little external evidence of distention. He had stereoraceous vomiting and absolute constipation; peristaltic gurgling was distinct and the sudden stoppage of same could be heard. Temperature sub-normal; pulse weak, rate 115. An immediate operation was advised. He was moved to the hospital on a cot and the abdomen was opened through the right rectus. An enormously distended bowel, at least three inches in diameter, presented. Quickly passing my hand into the pelvis, the collapsed portion of ileum was found and traced to the point of obstruction, which was caused by a loop of intestines slipping through a hole in the mesenteric border, where it had been detached from the gut for a distance of three-quarters of an inch, producing complete strangulation. The loop involved was about six inches long, situated a short distance from ileo-cecal valve, and was rather dark in color. It was released and the gut reattached to mesentery closing the hole. After a few minutes of intra-abdominal warmth, evidences of returning circulation were manifest in the loop and the abdomen closed. Complete recovery followed although he was semi-conscious for several days, owing to the intense poisoning or toxemia.

The attacks of colic were evidently produced by a knuckle of the bowel becoming engaged in the rent produced by the injury, but it only entered far enough to produce temporary strangulation and under morphin and rest would disengage itself, but each time this would occur the hole would be stretched, thus leading up to the final strangulation. Although the intestines were enormously distended, there was but little external evidence of it, owing to the well developed muscles of the abdominal wall. The greatly distended ileum must have been caused by the previous attacks and the bowel not having time between attacks to recover its normal diameter.

E. L., aged 35 years, weight 125 pounds. I saw him at 5 a. m. and secured the following history:

Had not been sick for twenty years, at which time he had some inflammatory trouble in the abdomen. Bowels had always been regular and digestion good. The evening previous to my call he had eaten cheese and salmon and was awakened at 4 a. m. with violent pain in the abdomen and vomiting. I found him suffering intensely; pain in the abdomen was increased by palpation; very little tenderness or rigidity. Vomiting occurred at intervals, no distention; bowels had moved slightly; peristaltic sound could be heard but I was not sure of the terminal explosive or splash sound. Pulse 100, temperature 98. There was an anxious, drawn and haggard look about his face. He appeared in a more serious condition than his symptoms justified. I advised Hoffman's anodyne, heat to the abdomen to be followed by salts and an enema. Salts were retained about one hour and vomited bile stained; no result from enema. Both were repeated during the next few hours with no results except to increase the pain, which now required a small dose of morphin to make it bearable. Dr. Rice of Quincy came in on the morning train to see a medical case and I invited him to see this patient with me. We decided that it was a case of obstruction; possibly strangulation. The same afternoon the patient was moved to the hospital and with Dr. Rice's assistance the abdomen was opened. The intestines were distended. By following the collapsed ileum as before the obstruction was readily found and proved to be a band of adhesions across the gut, over which a heavy coil of the intestines had

fallen, producing complete strangulation. The band was released. Complete recovery resulted.

The band across the gut must have been of long standing yet it had caused no previous trouble, no constipation nor colic.

DISCUSSION

Dr. William M. Harsha, Chicago: The doctor has covered the subject very well indeed, and he does well to limit it to one phase because there is enough to it to take up all of our time.

The importance of making an early diagnosis cannot be overestimated. To make an accurate diagnosis is well nigh impossible. At any rate, it is very great. There are two classes of cases of which he has spoken, those that are attended with very severe pain, causing shock, causing very great depression, attended by early vomiting, slow pulse, possibly clammy perspiration. This is the class of cases that have to be handled promptly. A rapid diagnosis is desirable though sometimes impossible, but the determination that the case is a surgical one can soon be reached, and that is the most important feature of this class.

Strangulation ileus is not always complete, and does not always give profound symptoms. I have in mind one case of strangulation ileus from a Meckel's diverticulum in which I saw the patient on the fifth day. At that time there were no profound symptoms. Of course, we know that patients often die within forty-eight hours or more of strangulation ileus. In this case the strangulation was not complete to begin with, so in these less urgent cases we have time, and we have means of making a more exact diagnosis, and I believe we ought to make an exact diagnosis when it is possible to do so before opening the abdomen. I believe that the safety of abdominal section has made it a practice to overlook some of the details in arriving at an exact diagnosis because of the fact that where it is impossible, we say it is an operative case. I believe promptness is commendable, but I believe also we should not neglect the things that we have learned that may aid us in a more exact diagnosis. I have seen operators very much confused in getting into the wrong end of the abdomen first. I believe there are ways of determining in most cases, excepting in these cases attended with profound shock, more exactly the location of the ileus.

The method of determining somewhat the level of the obstruction is worthy of consideration. The character of the vomitus, whether it contains bile, shows whether it is below the emptying of the bile duct. If it contains intestinal fluid, it shows it is still lower down. If the vomiting comes later and the distention is more in the middle of the abdomen, then it shows a lower obstruction. Ninety per cent. of the cases of intestinal strangulation are in the small intestine; probably 60 per cent. of the cases of strangulation are due to bands of adhesions, and approximately 60 per cent. of them are found in the ileocecal region. Eighty per cent. approximately are found in the lower abdomen, so that if we bear in mind these various things, we can tell something about the location of obstruction.

There is another item that is important. I believe that in these cases with profound shock, we have to give some form of opiate, and while it is not good practice to use opium indiscriminately, where there is profound shock, it is the medicine we have to resort to, and when we do, we may better locate the trouble. Having tried the preliminary methods of evacuation, and when we have used morphin or opium we can then palpate the abdomen better; we can tell more nearly where the trouble is, because we eliminate certain referred pains, which referred pains are scattered very widely, as you know. You take a case of acute gall-bladder colic, and the pain will be all over the abdomen until you put the patient half asleep with morphin or chloroform, and then the pain will be reduced to the location where it started. The same thing is true to some extent in these cases of intestinal obstruction.

Another thing: palpation by the vagina or rectum will very often determine a cyst-like feeling inside the abdomen. In the one case I referred to of Meckel's diverticulum, a loop of intestine was in the lower abdomen, where 80 per cent.

of them are. On vaginal examination one could feel an elastic swelling, as though there was a cyst. The intestine was strangulated and distended to three or four times its size, held firmly by the bands, and offered that resistance to the finger which a cyst would offer. The same thing I have determined by rectal examination in a man with strangulation of the intestine. Palpation in the bath will also help when palpation cannot be satisfactorily made otherwise. A patient who is submerged in warm water in a bath tub and fixed in the position he would assume lying on his back, will offer less resistance on account of the abdominal walls than patients in bed, and in some cases a determination can be made out in this way. The great majority of cases, as in the second case recited by Dr. Miller, are due to either former operations or former infections, 60 or more per cent. of them, and a history of a previous operation, whether simple, or whether an operation in the presence of infection, with drainage, will be found in more than half of the cases. Where that is the case we can expect to find a band or a kink from some broad adhesion.

There is another class of cases we operate upon where we never find a cause for the obstruction. I had one or two like that. I could see the loop had been strangulated with a ring around it, and after removing the obstruction, it was found to be due to some kink brought about probably by a change in the position of the intestine.

Dr. Clifford U. Collins, Peoria: There are just two points I want to discuss in connection with this paper. If the general practitioner puts nitrate of silver in the eyes of all the babies he delivers and sews up all the lacerations of the mothers and does all the other things he has been told to-day he will be a busy man when he gets home.

Nevertheless, I do not believe the mortality rate in obstruction of the bowels will be lowered until the patients are brought to the surgeon earlier by the general practitioner who usually sees them first. The trouble is that the general practitioner will see a patient and if the patient has pain in the abdomen he usually gives morphin and says that he will call the next day. The patient who has suspected obstruction of the bowels should be seen at very frequent intervals until the diagnosis is clear. The general practitioner should use the methods Dr. Harsha has told about and endeavor to make an accurate diagnosis as soon as possible and carry out the proper treatment. We all know that the mortality rate in this class of cases increases as the length of time elapses from the time the obstruction began.

One other point: one danger in operating on these cases is that of the patient drowning in the fecal vomit. This point was brought out a few days ago in an article by Dr. E. Wyllys Andrews which was published in the *Annals of Surgery*. This occurred in one of my cases at about the time this article was published and the quantity of fecal matter which passed out of the patient's mouth was far beyond the capacity of the stomach to hold. It usually occurs soon after the patient is anesthetized and the theory is that the pyloric and cardiac openings of the stomach become relaxed by the anesthetic and this allows the fecal matter contained in the upper bowel to find its way into the stomach and out through the esophagus. Washing out the stomach would not be sufficient because a great deal of that material must come from the upper bowel. I operate on these patients in the reverse Trendelenburg position. In this way gravity tends to keep this material in the bowels and prevents it from coming up into the stomach. Since I have done this we have lost no patients in that way.

Dr. James F. Percy, Galesburg: There is one phase of this subject that cannot be dismissed too often. It was mentioned in the paper, and that is the use of laxatives. I am positive that there are more cases of intestinal obstruction killed by laxatives than there is by surgery, even poor surgery. The first impulse of every one engaged in the practice of medicine, who sees a case of bowel obstruction is to get them to move, and in his anxiety to get them to move he forgets the patient. Even to-day the practitioners who see these cases first usually forget the point that Nature rejects everything that is put in the stomach and therefore

nothing should go into the stomach. I have seen these patients filled up with morphin, so that they could not vomit; and in one case of pain, epsom salts were put into the stomach, not in one dose, but in repeated doses. I have seen enormous doses of calomel given, with croton oil, and it is these things which increase the peristalsis that goes up against the constriction, that forces through the walls of the bowels the microorganisms which produce peritonitis and death. The principal thing is to relieve the constriction, and leave the case to Nature and never give a cathartic until the patient passes flatus from the bowel. Those patients will then remain comfortable. In the old days our fear of peritonitis and paralysis made us start, as soon as the patient was out of the anesthetic, to give cathartics, and they vomited for three or four or five days, and they suffered much. To-day, the man who operates and knows he has done a clean operation, has relieved the constriction, does not have to worry about cathartics. He can forget that it is necessary to give one.

Another thing is with reference to moving these patients to a hospital. These patients ought to be in a hospital. If it is true that twenty-five in a hundred more people die from operations performed at houses than those that are performed in hospitals, then this question admits of no debate.

Another thing is with reference to the use of morphin. Too many of us give one-quarter of a grain of morphin as a routine. The sixteenth of a grain of morphin will relieve suffering just as effectively. It is marvelous what that dose will do in relieving pain that is expressed through the sympathetic nerves, and then you do not drug your patients. You take off the wire edge, so to speak, and if they are nervous, and much of the pain may be due to nervousness, you have got the mental effect of the hypodermic injection anyway. We have in our section of the country a doctor practicing who never gives morphin unless the patient is in shock until they consent to go to the hospital, and I do not think I have ever seen a case die of appendicitis or what not that has come under this man's care. We can reduce our mortality by getting these cases early, operating on them promptly, and refraining from the use of cathartics.

Dr. Miller (closing the discussion): I find that Dr. Percy is as radical in this matter as he is about some other things. Now, I have treated nine cases of strangulated ileus, and of course it is such a small number that one can scarcely draw any conclusions therefrom. If you go up to the Mayos they will give you 900 or 9,000, and then you can draw conclusions from such a large number of cases. We little fellows who practice in the country do not see very many of these cases, but out of the number I have reported I have not lost a case. The proof of the pudding is in the eating. The idea of letting this poison or toxic substance remain in the bowels, provided there is no resection, for days and days, waiting for a paralytic condition in that loop of intestine to become normal, and for the poison to pass through, is not good practice. We know that rapid absorption of the toxins takes place, and the patient becomes more and more profoundly toxic all the time, and for that reason, where there is any obstruction of the bowel it is urgent to use eserine and to use laxatives immediately after obstruction is removed.

In regard to the use of laxatives beforehand. If you will show me a general practitioner who will go to a case that is vomiting and has pain in the abdomen, and not give that patient some agent to start with for the purpose of differentiation, you will surprise me very much. I do not think there is one out of a hundred who would not do it. I believe they would all do it, and as I said in my paper that while laxatives should be given they should not be persisted in for a long time. You give them for the purpose of helping you in your diagnosis, to keep you from operating on those cases that are due to other causes than to intestinal strangulation.

In regard to the bath-tub examination referred to by Dr. Harsha, I do not know why it is, but people in my locality do not often have bath tubs sufficiently large that you can shove a patient in up to the neck. This bath-tub business is out of the question with me, and in our practice as country doctors we could not make use of it very often.

In my paper I stated that I did not attempt to exhaust the subject. I could not go into it as extensively as I wished, because the twenty minutes allotted to me would not be enough to do so.

With regard to operations done at home and in hospitals, I will say that in Pittsfield we did not have a hospital until two years ago. At that time I started a hospital there, and my previous 150 major operations were done at the homes of the patients, that is, my first ones. Of that number I lost two cases. Lots of these operations were done in hovels, in log cabins, and with the most miserable surroundings, and I think, as I said before, while the hospital offers greater facilities and ease with which our operations can be done, yet an operation can be safely done at a patient's home. Of that I am perfectly convinced. There are a great many city surgeons, with all honor to their skill and dexterity, who, if they were taken into a hovel and had to operate there without trained nurses, and had to depend upon two country doctors to assist them, who are probably not thorough in their asepsis, would not get any better results than some of us country doctors, and it makes no difference whether it is Murphy or any other doctor, he would be up against it, and he would be more likely to lose his patients than a "scrub" like myself who watches every little detail of the preparation. (Applause.)

POLIOMYELITIS *

L. B. RUSSELL, M.D.
HOOPESTON, ILL.

If there is anything worse than death for a child it is to see one apparently in the full vigor of health and then some day or some night taken with paralysis and unable to move hand or foot, the doctor knowing well that in all probability this means a cripple for life. One of the most pitiable sights that it has been my lot to witness in seventeen years of practice was to see a little 5-year-old, bright-eyed girl lying on a cot and paralyzed from her shoulders to her feet. We don't know when this may come in our home, and worst of all we know of no preventive and no cure. But with many of our brightest physicians all over the world working and experimenting on this disease, we do believe that, in the near future, we will have a preventive and perhaps a cure.

History.—As the first history in many things is found in the Bible, so Robert W. Lovett, of Boston, thinks the first allusion to infantile paralysis in literature is found in the Holy Scripture. Samuel, the fourth chapter and the fourth verse, reads as follows:

"And Jonathan, Saul's son, had a son that was lame in his feet. He was 5 years old when the tidings came of Saul and Jonathan out of Jezreel, and his nurse took him up and it came to pass as she made haste to flee that he fell and became lame. And his name was Mephibosheth."

This short history, although suggestive, is not convincing.

That we have had poliomyelitis in the States for many years is well known. I have personal knowledge of a man who claims to have been paralyzed by this disease in 1832. Louisiana claims the first epidemic in 1841, but it was in 1875 that the first epidemic of any importance

* Read before the Hoopeton Medical Society, Nov. 6, 1911.

occurred, which was in Philadelphia. According to Lovett there was not much increase in this disease until in the eighties, when in the east there were a great many more cases, and for the last twenty-five years there has been more or less of a gradual increase of this dreadful trouble.

According to the best statistics at hand, we find there were 9,000 cases in the States in 1910. Of these there were about 845 in Massachusetts; 1,000 in Pennsylvania; 1,000 in Minnesota; 500 in Indiana; 651 in Iowa; 137 in Illinois, with the balance scattered over the different parts of the country.

It is strange that most of these cases are north of Mason and Dixon's line when the epidemics occur in hot weather, but recent literature tells us that poliomyelitis is on the increase in the south.

Etiology.—In years past various causes were assigned to produce poliomyelitis, among which was that of over-worked dentition. In the whole category of medicine teething has some time or other been named as the cause of most every disease of childhood. Then as supposed causes we have traumatism, cold, overexertion, etc.

Samuel G. Dixon, Commissioner of Health of Pennsylvania, and Simon Flexner of the Rockefeller Institute of New York, have been tireless workers in seeking out the cause of infantile paralysis. Dixon, especially, in the October number of the *American Journal of Diseases of Children*, has covered a very wide range, of what might contribute to produce this direful disease. In short, his claims are as follows:

Elevation plays no part.

Geological formations show the disease less prevalent over sand and gravel than where the drainage is less favorable.

Time of year: no cases in January; few in February, March, April and May. July, August, September and October showed the most cases, the maximum being reached in August, with September a close second.

The different kinds of vegetation showed nothing of importance, except that the disease is most prevalent when the harvest season is about ended. Dixon says: "Possibly fungus growths favored by local death of plants may have furnished a nidus for the unusual development of an intermediate host in which the virus may have passed through some stage of its life cycle." Fruit eaten, vermin around the place, trees located near, insect bites and domestic animals show nothing of importance.

"In 128 homes sanitary conditions are classified as excellent; in 215 homes as good; in 216 as fair; in sixty-six as bad, with 138 unstated."

The water, milk and ice supply was gone over very carefully with no conclusive evidence.

Virus or Causative Agent.—This agent is not definitely known, but many experiments have been made to find out what may prove to be the germ or microorganism. Thus far the only results obtained, it seems, should be credited to Samuel G. Dixon, Commissioner of Health of Pennsylvania. He has described a microorganism heretofore undescribed that is found in the blood of people suffering with poliomyelitis. These microorganisms are found in the serum or attached to the red blood-

eorpuscle. Through the kindness of Dr. Dixon, it is our privilege to exhibit under the microscope a slide showing these microorganisms. His description, which is as follows, tallies very nicely with what we see viewed with high power. "Blood-smears fixed with methyl alcohol for one minute and stained with carbol-thionin; the organism appears as a faintly-stained blue rod with regular cell wall about 10 microns long and about 8 microns in width, curved at an angle of 60 or 75 degrees at one end and occasionally at both ends. At times the curved ends are bulbous."

It is unknown how the virus is conveyed from one person to another. It is generally believed it is more or less contagious by direct contact and Flexner believes that it can be transmitted through a third person. The committee of the American Medical Association on methods for the control of this disease have mentioned that the virus might be carried in the dust, and to us this seems very plausible, for most of our cases, which are not many, have been in dusty localities.

Pathology.—Viewed from a pathologic standpoint, there are two forms of poliomyelitis or perhaps more correctly speaking there is a poliomyelitis and a polioencephalitis. It was Medin, the Swedish physician, who first recognized this latter form of meningitis.

Koplik of New York tells us that the infectious agent of poliomyelitis may extend to any part of the cerebrospinal system and may affect both the white and gray matter and that we may have a real meningitis. The medulla and pons may be affected leaving the cord almost entirely free. However, the case we usually see is anterior poliomyelitis, that is, the anterior horn of the cord is where the pathologic condition is most marked. Presumably this is so because this part of the cord is well supplied with blood-vessels and the nervous system becomes infected through the circulation: consequently that part of the nervous system which is best supplied with blood is the seat of greatest infection.

The extent and location of paralysis depend on how extensive is the inflammation caused by the microorganism and where it is located. If the microorganism which causes poliomyelitis is carried in the blood, which is now generally believed, it is easy to see why the anterior horn is the common seat of trouble and it is also easy to explain how any part of the nervous system might have the active process of the microorganism.

I am not familiar enough with the circulation of the spinal cord to tell just why one part of the spinal cord may be more frequently diseased than some other part, yet this might be all explained from the circulation standpoint. This might further explain why the sphincters are very seldom paralyzed. Whatever the cause it is found that the legs are more frequently paralyzed than the arms, the right arm more frequently than the left, the left leg more frequently than the right and right hemiplegia more frequently than left. In the Pennsylvania epidemic the difference was not marked by any great number either way. There may be paralysis of the face, eyes, back or abdomen.

Good authorities tell us the proximal part of the arm is more frequently paralyzed than the distal and that the same holds true of the

leg. except it is claimed by one author that the sartorius muscle is never paralyzed.

According to Church and Peterson there has been considerable discussion and investigation whether or not the process in the cord is parenchymatous or interstitial and the consensus of opinion now is that it is the latter and that the cord is especially affected on account of the circulatory changes. When the active process is over, the cord is shrunken to an extent depending largely on the amount of the primary inflammation. The pathologic changes in the muscles are the result of lack of nerve supply and lack of use.

Prognosis.—The death-rate in various epidemics varies from 5 to 20 per cent., and the per cent. of cripples from 65 to 75. So in every 1,000 cases we have at least fifty deaths and 650 cripples.

Symptoms and Diagnosis.—The symptoms of infantile paralysis are usually divided into four stages. First, the stage of onset, which stage much resembles the initial stage of some of the eruptive fevers; but it is seldom diagnosed in this stage. We have fever, vomiting, headache and rarely convulsions or coma; there may be pain or tenderness over the trunk or limbs. The second stage is that of paralysis, which may be of one arm or leg, or both arms and both legs or any of the muscles of the extremities, although the extensors are more frequently affected than the flexors. I believe it is claimed the sphincter muscles and the muscles of respiration are never paralyzed, but the muscles of the back and abdomen are at times included. This stage lasts from a few days to a few weeks. Then the third stage, in which there is an improvement of the paralysis for a year. The fourth stage commences after the year and many times means deformity for life.

One of the early symptoms is the loss of the tendon reflex and ordinarily no loss of sensation; later come the atrophic changes, flaccidity of involved muscles and spontaneous improvement of certain groups. With some of the muscles active and some paralyzed there is deformity produced such as talipes, lordosis, etc.

The diagnosis of the spinal form of this disease after the paralysis is not difficult and can hardly be mistaken for anything else, but the diagnosis of the cerebral form is a different story. I have never seen a case of this kind; if so, I did not recognize it. Henry Koplik of New York discusses this form of infantile paralysis very scientifically and thoroughly in the August number of the *American Journal of Diseases of Children*, but for fear of making this paper, already quite lengthy, too long, I will not review his article.

Treatment.—With the present state of our knowledge of this disease there are to be discussed eliminative treatment, medicine excreted into the spinal cord, local applications to spine, lumbar puncture, electricity and exercise. Late in the disease the orthopedic surgeon is the man to look to for help.

The bowels, kidneys and skin should be kept active; it does not make much difference what drugs are used just so results are secured along the

eliminative line. Hexamethylenamin is generally recommended as the best medicine in the disease as it is excreted into the spinal cord; there it acts as an antiseptic and if given early it is no doubt of considerable value. The salicylates are also so given to obtain the same results. Cold applied to the spine to relieve the congested condition is recommended. Lumbar puncture to relieve the congested condition in the spinal canal, in theory looks like a valuable remedy. Some claim rest in bed should be had with as little exercise as possible until the fever is gone; others claim electricity should be used as soon as the case is diagnosed infantile paralysis. Heat to improve the circulation in the paralyzed muscles is important. Sachs and Strunsky lay much stress on muscle training.

Strunsky in a recent article insists that the dominant element of success in the restoration of function is in suggestion, in securing the cooperation of the patient in the effort to make the desired movement, and that massage, passive motion and electricity, when helpful, are so because they are means of obtaining this end.

WHY LACK OF INTEREST IN OBSTETRICS?

E. A. COOK, M.D.

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In presenting this short paper, I do not attempt to give anything new and at the same time I shall not quote or copy from text-books. It is my desire simply to impress or refresh that which you already know well.

Obstetrics as a subject is too broad to allow of any details being brought out; especially would I hesitate before men of so many more years of experience than mine. However, interest in obstetrical work and my careful record kept of this practice have caused me to observe closely and taught me many truths.

I believe few of us, if any at all, really like the practice of obstetrics; hence we are prone to be negligent. It is hard to do well that which we dislike. This distaste is in part due to the untimely hours at which the "stork" centers on some homes. Again it is due to the slow and small remuneration received for the time, knowledge, anxiety and labor involved. A second thought suggests that perhaps we are getting our just dues for what services we render. To permit girls to grow up into undeveloped womanhood ignorant of sexual acts and marriage relations, later to become infected by one whom she loves; to permit women to enter confinement on the verge of uremic poisoning, and to suffer nephritis, constipation, pruritus, leukorrhea, indiscreet eating and living with their evil tendencies; to leave a baby with a compression of the skull, conjunctivitis and a distorted spine; to leave a mother of a few days with a shattered nervous system, a foul discharge, a torn cervix, a lacerated perineum and a sore nipple — these, I say, are not worth very much. We

should charge more, but this can never be done until the people, the masses, are taught the dangers that attend every pregnant woman. They should be made to know, as well as physicians know, that to skilfully and successfully conduct some confinements requires a greater degree of intelligence, patience and scientific application than does the average case of appendicitis. We tell them the patient may die if the appendix is not removed; patient goes to the hospital, operation over in one hour, fee of from \$100 to \$500, paid and without complaint. We may tell a husband that his wife can never deliver her child and she may die in the attempt. She may suffer many hours and finally submits to aid in delivery. The doctor sweats blood, so to speak, cares for two patients instead of one for days and weeks and presents a bill of from \$20 to \$30 and finds it slowly and complainingly paid.

My contention is that we should do more, render more service, expect and collect more dollars. Because we attach so little importance to the practice we invite midwifery of the cheapest and most incompetent type. It is true they frequently are fortunate enough to escape any complications or evil results.

It is a fact that the general practitioner must do obstetrical work or before many years he will have no general practice to do. This being true we should make the best of it; we should impress our patrons, every husband and wife, with the proper importance of the work. To have charge of and be held responsible for the welfare of a pregnant and puerperal woman for five or six months is a responsibility of great magnitude. Simply a passing thought does not enable the average man to intelligently grasp the situation. We should never fail to use every available opportunity to see that the expectant mother knows we are thinking of her and that she is requiring a part of our time, which can be done without unduly alarming anyone.

More importance should be placed on some minor things. The doctor to-day who accepts a string from the wood-box or some one's pocket with which to tie the cord, and who uses the household scissors to sever the same is not worthy the title he bears. He who uses the saucer of lard with which to lubricate his hand is but little better than the "granny" of forty years ago. It is the use of these old commonplace ways and means that leaves the practice of obstetrics where it was many years ago. People have abandoned their "teas," "salves" and "poultices" for the scientific remedies as applied by the doctor to-day. They have forgotten many of the old signs and ideas in regard to disease and have learned of the many microbes, germs and other causes of impaired health. They have been taught to believe that these newer ideas and methods are saner and safer than the old; an operation for appendicitis or a treatment of pneumonia is to-day a science, the people know it and gladly pay the price.

The profession has made great advancements in the science of medicine and surgery, but with this to our credit, we must admit we have neglected one of the most important branches, that of obstetrics. I believe it behooves us to give this more earnest consideration, the results of this branch are most far reaching. The poor or careless administration

of drugs or the use of the knife by an incompetent hand may cause a death, but seldom an invalid for the remainder of life. The ills that date to a woman's confinement are almost innumerable. We have all heard this in our offices: "I have never been well or right since my baby was born." If 35 to 50 per cent. of American mothers are made physical and nervous wrecks, thereby existing for some years as unhappy, invalid wives, by the birth of a child, is it not time the medical profession takes notice? Some one says it is a normal condition of Nature and let Nature take her course. Granting the truthfulness of the argument, the doctor with a very limited field of obstetrical practice must know and is forced to admit that there are many, many cases of obstetrics that at least seem to be unnatural or abnormal, yea, so unnatural that we are forced to snuff out a life. This fact before us, the pregnant woman from the earliest knowledge of pregnancy, to at least four weeks following the delivery of the child, has a right to expect constant care.

Much of the fretting, worrying, loss of sleep, quick actions and anxious moments should have interested us often, many months before they usually do. In other words, we should exert our efforts at the other end of gestation. We should not be content to call so many of the evils of confinement "necessary evils." Patient and intelligent instruction in the early months of pregnancy will prevent a great many of the abnormalities. If we will but take notice, the hollow-eyed woman, pale faces, reeling movements and the faded freshness of youth are ever present accusers.

By way of parenthesis, I mention that I believe it is our duty to encourage medical school inspection. This properly done, would be a rapid means of raising the standard, nervous and physical, of our girls.

Much might also be done by encouraging the "family doctor" idea. Where a number of different doctors are called, on different occasions, in the same family, they do not and cannot feel that free, close interested relation that should exist between the physician and the family. We all practice in homes nowadays where some suggestions to the mother in regard to 6-year-old Mary, or her sister who is 13, might be of great value to them in later years; but we withhold these suggestions, as we were called to prescribe only for brother John. The less we say to the other members of the family, the quicker we diagnose his case, prescribe and leave the house, the wiser are we in the minds of many. This condition should not be; it is our duty, I feel, to encourage a change. By doing so we shall have stronger and healthier girls, girls who will become womanly and motherly, through the friendly counsel of a wise, thoughtful, fatherly family physician, who has in mind their future health and happiness. Likewise the boys of these homes should receive some instruction as opportunities arise. The true or real goal, the future obstetrical work, is quite remote. Perhaps I have here digressed somewhat, but I see in this, at which I have hinted, a lack of interest in obstetrics.

It is an existing fact that the girls of to-day, city or country, in at least 40 per cent. of cases, are not well prepared to undergo the physical demands of even a normal pregnancy, much less an abnormal one, with

its usual serious complications. We have all been asked, if by no one but ourselves, why this is so.

Every one can enumerate a score of small things, such as a lack of education in regard to her menstrual flow, early company, irregular hours, exposure, the corset, shows and novels, indiscreet eating as practiced by the American people, low-necked and thinly arranged clothing, early marriages with no knowledge of the sexual life, the horrible effects of venereal diseases previously contracted by the husband and disseminated through the system of the young wife, the practice of old women when they say that the various symptoms, aches and pains, mean nothing and there is nothing to be feared; the lack of interest and attention by the general practitioner — all these and many others you might mention, contribute to the overburdening and poisoning of the ill-prepared systems, and are responsible to a great extent for the sad results we get in our modern obstetrics and that are brought so often and forcibly before us.

We have all seen patients die of typhoid fever, pneumonia and the various diseases, we have seen them die of the anesthetic, we have seen them hurried from under the surgeon's knife to die in bed, we have seen the innocent babe respond to the call — suffer the children to come unto me — we have seen the aged close their eyes and whisper their last earthly good-bye. These, though at the time seeming to make deep impressions, are soon forgotten and only a few are vividly recalled. The sane doctor does not live, who can banish from his mind a death due directly to obstetrics. Do what he will, go where he will, in an instant every death due to confinement that he ever saw is vividly before him. Why this everlasting impression? Why do you find it hard to resume your sleep after returning from an unfavorable serious obstetrical case? Why are you so eager to shift the responsibility and say to your patrons, "I just helped Dr. Blank, it was his case, not mine"? Why this troubled, or shall I say guilty conscience? May we not feel that the Great Physician above, who has to do with our minds and consciences, is directly responsible for this indelible impression? Whether we accept this or not we must admit the existing true condition. For our own peace and happiness we must interest ourselves individually in bringing about a safer condition for our future American mothers before, during and after confinement.

The urine should be frequently examined; we should not wait for edema, headache and the accompanying evils. We should not be satisfied with this alone but should see the patient and question her personally in regard to the details of her everyday life. For frequently a pregnant woman's urine may be free from albumin and her limbs free from swelling, and at the same time she is on dangerous ground. Very often the swelling and kidney trouble are only secondary troubles.

The nervous organization of our modern women has been passing through a gradual change for many generations. Our civilization has made such persistent and exacting drains on the systems, that the physical is dwarfed and the nervous is highly strung, poorly nourished and hardly able to bear the little jars of everyday life. If these 1911 and 1912

models become pregnant and have not very material aid from an intelligent, well-prepared and careful medical adviser, we may expect only unpleasant results, with the usual complications. We cannot correct as we would like to do, the physical and nervous conditions of these late models; then it is our sacred duty to place them in the best possible condition for the great demands which are made on these systems at the time of confinement.

In the haphazard care we give, and the unpleasant results obtained, we have all, at some time, found ourselves floundering around in our endeavor to satisfy the family and clear our own skirts of any blame. We should give thought and care enough to these patients, and the family must be made to feel that they are getting the best attention and most skilful care, so that if any evil results should become our lot, a few plain truths will clear us of any unnecessary criticism. Instead of accepting our pregnant charges as normal conditions, might I suggest that we take them as abnormalities, and then set about to prove them otherwise if possible?

Then too, we often feel that if both mother and babe are left living, our duty is ended. Our duty, as I see it, does not end for three or four weeks later, when a careful examination should be made. Not only should lacerations be looked for and corrected if found, and displacements if any, corrected, but the nervous system carefully watched and its equilibrium maintained. Even if we do not correct these troubles, the patient in the presence of her husband or some friend, should be informed of her true condition, the treatment, and the future consequences. Then if our patient should some time later see fit to go to Dr. A or perchance fall under his care, he will not have the pleasure of telling her something she does not already know. By so doing a doctor would save himself severe censure and maintain his good standing in the family. Thus every general practitioner who accepts obstetrical charges is of necessity forced well into the field of gynecology.

Educate the people to the dangers to the patient and the responsibility of the physician.

Make the patient feel that you are glad for her sake and that she should be glad for her own welfare, that she spoke to you so early in gestation, that a month later in her case might have been too late.

Do not accept an obstetrical call for which you have not been previously engaged except under extreme circumstances, and if it so happened that no doctor had been engaged, make such an impression on those interested, that it will never occur again with them or any of their friends.

Discourage many of the commonplace ideas and appliances.

Request reports at stated intervals and if not received make the patient to feel that the responsibility then and there shifts from you to herself.

Remember this is an age of preventive treatment.

See that your services are truly professional services and thereby add value and dignity to this branch of the work.

Last, but not least, encourage a better and more prompt remuneration for services rendered.

ILLINOIS MEDICAL JOURNAL

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FEBRUARY, 1912

THE TWENTY GREATEST NAMES IN THE HISTORY OF MEDICINE PRIOR TO THE BEGINNING OF THE TWENTIETH CENTURY A. D.

Some weeks ago Mr. Andrew Carnegie suggested twenty names which in his opinion stood highest in the estimation of the world, as the greatest inventors and benefactors. Only two of these, we believe, were in any way connected with the science of medicine.

It has occurred to us that it would be a good plan to suggest the names of twenty men who are considered by common consent as the greatest in the history of the science of medicine. About ten of these names there will be no discussion, but about the other ten there will be great difference of opinion, and we invite our readers to pass opinion on this list, and suggest other names, with their reasons for believing that they should be included in the list. The proposed names are as follows:

ÆSCULAPIUS (probably legendary) great god of medicine of ancient Greeks.

HIPPOCRATES, 460-361 B. C. Greek. Seventeenth (?) in descent from Æsculapius, born in Cos about 460 B. C. Practiced in Thessaly and Athens. Born of a family of priest physicians, inheriting all its prejudices and traditions. He was the first to cast superstition aside and base the practice of medicine on the principles of inductive philosophy.

Wielded great influence on the thought of Æschylus, Plato, Socrates, Sophocles, Euripides, Herodotus and Thucydides. His observations on the natural history of disease mark him as a great clinician. The first to recognize the *vis medicatrix naturæ*. Placed great dependence on diet and regimen. Laennec acknowledged that he derived from Hippocrates the idea of auscultation which he developed. The Hippocratic oath, succussion and facies remain as professional terms to this day.

GALEN, 131-200 A.D. Greek. A Greek who moved to Rome, then the center of the world; a graduate of Alexandria, Egypt; physician and friend to Marcus Aurelius; large minded man. His reputation due to his reliance on rational and intelligible evidence; the first great physiologist; discovered the function of the arteries. Used the term of anastomosis of vessels, described aneurysm and the nervous system.

PARÉ 1510-1580, A. D. Frenchman. He began life as a barber surgeon; that is to say, at the bottom of the ladder, and became the greatest surgical authority of his time, and the best beloved man in France. The first great modern clinical surgeon, known especially for his rational treatment of wounds and ligaturing of arteries. His works first published in Paris in 1575, and frequently reprinted. Several editions in German, Dutch and English.

WILLIAM HARVEY, 1578-1657. English. Graduate of Cambridge and Padua; became doctor of medicine in 1602; physician to St. Bartholomew's Hospital. In 1616 first brought forward his views on the movements of the heart and the blood; transferred all his property for the endowment of an annual oration, still delivered on his anniversary. The orator is to exhort the fellows of the "college to search out and study the secrets of nature by way of experiment, and also for the honor of the profession to continue mutual love and affection among themselves." While Harvey wrote intelligently on generation, his fame rests on his discovery of the circulatory system. The value of his discovery was recognized during his life and he died full of years and honor in his 81st year.

THOMAS SYDENHAM, 1624-1689. English. A graduate of Oxford and Cambridge; studied at Montpellier. His first book on curing fevers in 1666; called the English Hippocrates; introduced landamear, Peruvian bark. First to diagnose hysteria, scarlet fever.

ANTONY VON LEUWENHOEK, 1632-1723. Dutch. Contributed his researches on the microscope to the Royal Society, London; demonstrated the continuity of the arteries and veins through the capillary and thus produced ocular proof of Harvey's discovery; also examined the crystal-line lens and the brain.

VAN BOERHAAVE, 1688-1738. Dutchman. In him the moral element of a liberal and candid spirit were united with the intellectual qualifications of observation, analysis and comparison.

ALBRECHT HALLER, 1708-1777. Swiss. Possessed a marvelous mind, colossal, wide grasping, omnivorous, retentive: called as first professor of medicine, anatomy, surgery and botany at the University of Göttingen. All modern work in surgery is but a development of the lines he laid

down. Prof. Samuel Gross was an intense admirer and named one of his sons after him.

JOHN HUNTER, 1728-1793. Scotchman. Physiologist, pathologist, surgeon; great philosopher in the broad sense; to this day his genius dominates and inspires our science; received the degree of M.D. in 1751, from Glasgow; pupil of William Cheselden, a famous surgeon, and of Percival Pott; devised subcutaneous tenotomy. Hunter's method was rigid adherence to deduction, founded on observation and experience, and his studies embraced an enormous field. Did first operation for aneurysm by ligature of artery above it. The greatest English speaking supporter of public scientific work.

EDWIN JENNER, 1749-1823. English. Pupil of John Hunter, in whose house he resided for two years; made investigations under Hunter's direction; great favorite; 43 years old when he received his degree. Discoverer of vaccination, on which his fame rests. First careful investigation began in 1775. Took years to complete the evidence and announced it in 1798. Honors were showered on him, and his renown became world wide, but the college of physicians showed its narrowness by failing to elect him to membership. Parliament made him two grants amounting to 30,000 pounds, and a large subscription was raised in India.

RENE THEO HYACINTHE LAENNEC, 1781-1826. French. Student in Paris under Corvisart at Hospital Necker. In 1816 he made the discovery of mediate auscultation by the stethoscope. His book, published 1819, produced undoubtedly a greater effect in so far as the advance of diagnosis is concerned than any other single work.

EPHRAIM McDOWELL, 1771-1830. American. Studied in Edinburgh under John Bell; performed the first ovariectomy in 1809, reported this case with two others at the Philadelphia Eclectic Repertoire in 1817.

D. J. LARREY, 1770-1842. Frenchman. Napoleon's great army surgeon; taught the value of surgical rest. First to establish field hospitals. Characterized by Napoleon as the noblest character he ever knew.

W. T. G. MORTON, 1819-1868. American. Dentist. Undoubtedly gave the first well-authenticated exhibition of anesthesia, in 1846.

SIR JAMES Y. SIMPSON, 1811-1870. Scotch. First to advocate use of chloroform especially in midwifery; improved methods of obstetrics and gynecology. Accorded a public funeral.

CHARLES DARWIN, 1809-1882. English. Naturalist; author of "Origin of Species;" took two sessions of medical study at Edinburgh; his father and grandfather were eminent physicians and scientists. His long life of patient, continuous work is the most fruitful, the most inspiring, in the annals of science, and especially moulded the form of modern thought.

SAMUEL D. GROSS, 1805-1884. American. Wrote the first systematic treatise on pathologic anatomy, investigated abdominal stab wounds, the excision of trifacial and spinal accessory nerves, the perfection of the urethrotome, and the study and treatment of tumors. Founded the American Surgical Association.

R. K. VONLANGENBECK, 1810-1887. German. Devised numerous operations, made countless improvements in technic, and established two important journals of surgery, his greatest contribution, according to Billings.

LOUIS PASTEUR, 1822-1895. French chemist. His exact methods of chemical and physical research enabled him to bring under the domain of scientific laws phenomena of disease which had so far baffled human endeavors.

RUDOLF VIRCHOW, 1821-1902. German. Father of modern pathology. In 1858 he established the true and fertile doctrine that every morbid structure consists of cells which have been derived from pre-existing cells as a progeny. Awarded the Copley Medal by the Royal Society of England in 1892. Anthropologist, pathologist, sanitarian, politician.

JOSEPH LISTER, 1827-1912. Englishman. A graduate of the University College, London. 1852; based his observation on Pasteur's discovery; founder of the modern science of surgery; the first member of the medical profession raised to the peerage, in 1897. A beautiful character, loved and respected by all classes of society.

PRIZES FOR MEDICAL AND SURGICAL APPLIANCES

The American Red Cross desires again to invite attention to the exhibition in connection with the ninth international Red Cross conference, which will be held in Washington, D. C., from May 7 to 17, 1912.

The exhibition will be divided into two sections, which will be styled Marie Feodorovna and General. The former is a prize competition, with prizes aggregating 18,000 rubles, or approximately \$9,000, divided into nine prizes, one of 6,000 rubles, approximately \$3,000; two of 3,000 rubles each, and six of 1,000 rubles each.

The subjects of this competition are as follows:

1. A scheme for the removal of wounded from the battlefield with the minimum number of stretcher bearers.
2. Portable (surgeons') washstands, for use in the field.
3. The best method of packing dressings for use at first aid and dressing stations.
4. Wheeled stretchers.
5. Transport of stretchers on mule back.
6. Easily folding portable stretchers.
7. Transport of the wounded between warships and hospital ships, and the coast.
8. The best method of heating railway cars by a system independent of steam from the locomotive.

9. The best model of portable Roentgen apparatus, permitting utilization of *x*-rays on the battlefield and at first aid stations.

The maximum prize will be awarded to the best exhibit, irrespective of the subject, and so on.

The General Exhibit is again divided into two parts; the first will be an exhibition by the various Red Cross Associations of the world. The second will be devoted to exhibits by individuals or business houses of any articles having to do with the amelioration of the sufferings of sick and wounded in war, which are not covered by the Marie Feodorovna prize competition for the year. While the American Red Cross will be glad to have any articles pertaining to medical and surgical practice in the field, it is especially anxious to secure a full exhibit relating to preventive measures in campaign. Such articles will be classified as follows:

1. Apparatus for furnishing good water in the field.
2. Field apparatus for the disposal of wastes.
3. Shelter such as portable huts, tents and the like, for hospital purposes.
4. Transport apparatus (to prevent the suffering of sick and wounded) exclusive of such apparatus as specified for the Marie Feodorovna prize competition.

As with the Marie Feodorovna prize competition, for this country only articles having the approval of the central committee of the American Red Cross will be accepted.

Diplomas will be awarded for exhibits in this section of the exhibition as approved and recommended by the jury.

Further information may be obtained from the Chairman, Exhibition Committee, American Red Cross, Washington, D. C.

It is perhaps to apparatus having to do with prevention of disease in armies that the energies of Americans have been specially directed since the Spanish-American War. Therefore the last-mentioned section of the exhibition should make an appeal to them.

NORTH DAKOTA ENFORCES ITS DRUG LAW

While nearly all states have laws which are designed to protect the people from fraudulent medicines, such protection is, as a matter of fact, given in but few states. Though in some cases this is because the law, like the federal food and drugs act, is insufficient, in most cases failure to give proper protection is due to a failure to enforce the law. This because those intrusted with its enforcement are prevented by political considerations from taking any action which by commercial interests could be held to be a "restraint of trade," no matter if such trade be dishonest.

That North Dakota has a satisfactory law and an efficient officer to enforce it is shown by a review of the November *Bulletin* of the North Dakota Agricultural Experiment Station, in *The Journal A. M. A.* (Dec. 23, 1911, p. 2097), where it is noted that Professor Ladd, the food and drug commissioner, is not "mealy-mouthed" and satisfied with glittering generalities but instead hits straight from the shoulder where hits are needed. The report contains analyses and condemnations of the following nostrums: Toris Compound, Dr. Greene's Improved Compound of Sarsap-

arilla, Pape's Cold Compound, Calocide Compound, Eilert's Extract of Tar and Wild Cherry and Red Raven Splits.

As an illustration of Professor Ladd's fearless condemnation of frauds on the public we quote his comments on Dr. Greene's Improved Compound of Sarsaparilla, which from the analysis appears not to be a concentrated preparation of sarsaparilla as claimed but rather had the characteristics of a weak aqueous infusion of gentian. Regarding this nostrum Professor Ladd says: "The writer cannot do other than class the sample which was examined in this laboratory as strictly of the fake class, the sale of which product is illegal in North Dakota. The claims made for this product are absurd, misleading and false. It does not contain the products which are purported to be present in sufficient quantity so that they may even be detected. Instead of containing 1/6,400 per cent. of formaldehyd. it contains 0.36 per cent., and instead of containing approximately 15 per cent. of alcohol it contains but a small fraction of 1 per cent.; and the information conveyed with this product bears all the earmarks of a fake preparation."

DR. CORWIN'S RESOLUTIONS

At a recent meeting of the Chicago Medical Society, under the head of new business, Dr. Corwin presented the following resolutions:

WHEREAS, The following editorial entitled, "The Amendments to the Constitution and By-Laws," appeared in the December issue of the ILLINOIS MEDICAL JOURNAL, page 678:

"As many of our members know, certain amendments were proposed at the meeting of the State Medical Society at Aurora, and copies of these amendments were sent to the various societies for their action. The amendments are quite radical and should receive honest consideration before final action is taken by any society instructing delegates to the Springfield meeting. It is difficult for members who do not follow closely the discussions in the House of Delegates to understand the significance of these amendments.

"The amendment to Article 3, offered by Dr. Zurowski, is apparently intended to reduce as much as possible the down state representation in the House of Delegates, and thereby make it more easy for the Chicago delegates to control the state society. It may be desirable for Chicago to control the state society, but there are many who think that this is no more desirable in the State Medical Society than it is in the State Legislature. Many of the people having such a view are residents of Chicago, who have appealed to the down state members to prevent it. The Zurowski amendment would of course prevent the councilors who represent the state society, for 362 days in the year, from being a part of the official organization during the remaining three days. This would be an anomalous monstrosity unknown to pathologists of medical politics.

"The meaning of the amendments to Article 3 of the Constitution, and Chapter 10, Section 4 of the By-Laws known as the Black amendments, is simply to prevent any one section of the state securing and holding control of the state society. The first amendment is to allow the branch societies in Chicago to secure a charter and become component units of the state society if they so desired.

"Careful reading of the amendment will show that there is no coercion about this matter. It is still left in the hands of the branch societies which compose the Chicago Medical Society to determine which form of representation they will select. The amendment was introduced because numerous members of these branch societies expressed a desire for this form of representation.

"The down state members and perhaps many members of the Chicago Medical Society do not understand that the membership at large in Cook County has nothing to say in the election of delegates to the state society. In that county, if we are correctly informed, this is done by the council, which has a membership of fifty. In other words, fifty members, and even a less number, of the Chicago Medical Society composed of approximately 2,000 members, elect whomsoever they please to represent this society in the House of Delegates. This may be the best plan, but many members of the Chicago Medical Society think that it would be far more democratic to give the branch societies the right to elect delegates to the state society by direct ballot of members. The amendment in no way forces this on Cook County, but simply gives them the opportunity to select it if they so desire.

"The second amendment is for the same purpose, namely, to prevent the delegation of one county from transacting business in the name of the state society. Cook County has more than twenty delegates and, therefore, it would be possible for the delegation from one society (Cook County) to become a quorum of the House of Delegates and transact business. For this reason it has seemed to many members of the state society only fair to amend this article so as to distribute the twenty delegates forming a quorum over at least ten counties. We cannot see what possible objection anyone could raise to this amendment if they have the best interests of the society at heart.

"The amendment is so framed that a county must have more than three hundred membership residing within its limits before it can have a branch society entitled to receive a charter and that such branch society must contain not less than seventy-five members living within a definite circumscribed district. This branch society shall be constituted of not less than 50 per cent. of the legally qualified physicians in such a district. In other words, this makes it possible for any county having three hundred physicians to divide itself into districts and give each district society the rights and standing of a county society.

"The state society is for the physicians of the state and should be conducted on the broadest and most liberal basis. Absolutely no constructive work has been possible at the annual sessions of the state society for the past two years. This contest over minor matters and the loaves and fishes should be eliminated at the Springfield meeting, and the state society should proceed to deal with the large problems which confront it and demand the best thought of broad-minded men."

WHEREAS, Instead of fairly and broadly discussing the amendments in question upon their merits, as becomes THE JOURNAL of the whole state society, said editorial is calculated to stir up unwarranted prejudice and apparently seeks to array as many delegates as possible against the delegates from Cook County in the next House of Delegates at Springfield; and

WHEREAS, The arousing of such antagonism is base in itself, unworthy of the editor of the State JOURNAL or any other man or set of men; and

WHEREAS, The methods of this and other of our State JOURNAL editorials are especially obnoxious because of their partisan representations and because they assign wrong motives to the delegates from Cook County, and therefore place them in a false light; and

WHEREAS, THE JOURNAL should encourage free and unbiased discussion of such questions and seek to promote the cooperation and better mutual understanding of physicians from all parts of the state, to the end that reform measures which are proposed may be properly considered and understood upon their merits and then adopted, modified or rejected upon their merits, but never upon the basis of personal prejudice or hostility; and

WHEREAS, The Council of the Chicago Medical Society protests against the way THE JOURNAL of the State Society is being controlled and conducted, and deplors its attitude of hostility and misrepresentation toward the Cook County Society and its delegates; and

WHEREAS, The Council of the Cook County Medical Society stands for a square deal to all and for a better control of the state society by the whole state membership and a more equable representation of all parts of the state in the control and management of the state society; and

WHEREAS, Cook County desires nothing more in the control and distribution of officers of the state society than is dictated by a spirit of justice to all; and

WHEREAS, The Cook County Society firmly believes in the fairness of a vast majority of the society membership throughout the state, and hereby is pledged to work in harmony with that spirit of fair-mindedness for the good of the whole society as against sectionalism or small ring rule, and is pledged to stimulate a wider interest among the rank and file, to increase membership in all the county societies, and to promote harmonious activity for the betterment of our profession in the service of the public; therefore, be it

Resolved, That the Publicity Committee of the Council of the Cook County Society be, and is hereby, instructed to draw up a fair and intelligent answer to the editorial in question, to be submitted to this Council, and, if adopted, to be published in the JOURNAL of our State Society and to be sent to the secretaries of each county society; and be it further

Resolved, That the various county societies be hereby requested to await the report of said committee before taking action to instruct their delegates to the next state society at Springfield, if they so desire ultimately to instruct; and be it further

Resolved, That in case the JOURNAL of the State Society does not promptly publish the committee's report replying to the editorial in question, that said report, duly published in *The Bulletin*, be mailed to each member of the state society, together with a copy of these resolutions, in order that there may be a thorough understanding of the proposed amendments and an honest and intelligent vote taken upon them; and

Resolved, That a copy of these resolutions be sent to the JOURNAL for publication and to the president and secretary of each county society.

Motion to adopt the report seconded and carried.

REPORT OF COMMITTEE AT SPECIAL MEETING OF THE COUNCIL OF CHICAGO MEDICAL SOCIETY

Dr. A. C. Cotton, Chairman: The Publicity Committee of Cook County Medical Society respectfully submits the following report, as requested by the resolutions passed by the Council at its meeting, Jan. 9, 1912:

To all Members of the Illinois State Medical Society:

The following amendments to the Constitution and By-Laws of the State Society proposed at the Aurora meeting will be considered by the next House of Delegates at Springfield. Since these amendments have been editorially commented upon by the JOURNAL in its December issue, in a manner neither courteous to its readers nor with sufficient intelligence to enable just conclusions, it is but fair to all that the following points for and against the amendments should be laid before the members whom the JOURNAL and others are laboring to prejudice against Cook County.

The Publicity Committee of the Council of the Cook County Medical Society therefore asks fair consideration of this report.

Whether amendments to our State Constitution shall be adopted or rejected is not the chief issue before the profession of the state. Our concern is that final action upon them at Springfield shall be based upon free discussion and full under-

standing of their import, and that the House of Delegates shall deal with them fairly on the basis of their merit. No element of sectional antagonism of one part of the state against another should exist, and none should be allowed to influence the settlement of these or any other questions.

The resolutions providing for this report set forth the real attitude of Cook County toward all other county societies, and her loyalty to the principle of wide and fair voice and representation from all parts of the state in the scientific, executive and legislative affairs of our Society.

THE PRESENT CONSTITUTION

ARTICLE V—HOUSE OF DELEGATES

"The House of Delegates shall consist of (a) delegates elected by the component societies; (b) the Councilors; and (c) ex-officio, the President and Secretary of this Association and the chairmen of its standing committees. It shall be the," etc.

THE PROPOSED AMENDMENT

Article V, House of Delegates (Zurawski): "The House of Delegates shall consist of delegates elected by the component societies and the President of this Society, ex-officio. The other officers, chairmen of standing committees and chairmen of scientific sections, may take part in the proceedings of the House of Delegates, but without the right to vote. It shall be," etc.

The reasons for this amendment are as follows:

1. By the present provision of our Constitution the Secretary of this Society, the nine Councilors and the chairmen of five standing committees, namely, Legislative, Public Policy, Medical Education, Medicolegal and Arrangements, are all elected to office by the House of Delegates. These fifteen so elected take their seats and vote in that body; thus they pass on *their own* reports and act and *vote on their own reelection*.

2. This system does not obtain in our National Congress, State Senate, Lower House nor in city councils nor in the House of Delegates of the Cook County Medical Society (its Council), nor in the American Medical Association. Nor does it obtain in any representative assembly save only in the House of Delegates of our State Society. The A. M. A. allows its Trustees, a body corresponding with our Councilors, to sit in House of Delegates, but *not to vote*. In this respect our own House of Delegates is anomalous and wrong in principle. First, because it spells multiple representation, since component societies are already equally represented in the House by regularly elected delegates. Other officers coming from component societies, *give such societies extra-delegate voice*. Second, it is further unfair, since these servants of the Society elected by the House crawl under the tent to seats in that body, while all other delegates enter to voting privilege through the normal door, component society selection.

3. If we would see how the present system operates in our State Society, we have but to consider how a handful of men may for years

perpetuate themselves in office by a grip on the machinery, and assume to hold the society in the hollow of their hands, thus promoting *small ring rule*. This concentration of power in the hands of a few must needs operate to the detriment of the best interests of the General Society.

This system, therefore, is a breeder of close corporation, monopoly and special privilege, wholly obnoxious to the true spirit of democracy. *Oligarchy has no place in popular government.*

4. The nine State Councilors form the Board of Trustees of our State Society. The A. M. A. has its Board of Trustees; likewise has the Council of Cook County Medical Society. In each case the representative body elects these Trustees, but only in our State Society do these Trustees *vote* in the body that *appoints* them; thus having a vote in the selection of their own successors, contrary to the custom of similar constituted bodies.

The words of the Editor that this amendment would illustrate "an anomalous monstrosity," etc., are poorly chosen, since the anomaly is in the present system as indicated. The *delegate* privileges which our Councilors now enjoy by grace of the Constitution *never should have been granted*. The amendment does not threaten their executive, advisory or repertorial functions. So much for the Zurawski amendment. If it does not mean the greatest good to the greatest number, added security to popular government, and the awakening of wider interest in the rank and file of the whole state, then Cook County desires its defeat. Believing, however, in its fundamental merits, the Council of Cook County Medical Society endorses it.

Article V, Section 8, lines 14 and 15, to read: "Twenty delegates representing not less than ten counties shall constitute a quorum for the transaction of business." The Editor takes it for granted that Cook County is against this, but apparently never has taken the trouble to ascertain.

Cook County Medical Society heartily endorses this amendment.

Proposed amendment to Chapter 10, Section 4, line 2 (Black): Introduce after the word county, the following: "Provided, that in counties having three hundred or more members, branch county societies may be organized and receive regular charters as component societies upon application to the Council in the usual manner, and provided, that each branch county society thus organized shall contain not less than seventy-five members who shall live within a definite circumscribed district, and who shall constitute not less than fifty per cent. of the legally qualified physicians living in that district."

This amendment of Dr. Black frankly aims at Cook County, since there is practically no other county society within which such rival branch county societies as proposed may be organized. The palpable objections to this amendment are as follows: 1. The Cook County Medical Society is a splendid federation of fourteen branches all flourishing, and all doing individual work of a high order, but all organic units democratically welded together by the central weekly meetings and by the delegate body of fifty—the Council. Of this body, fifteen are elected at large by

vote of the whole membership. The balance are chosen pro rata by the branches, according to their numerical strength. The editorial in question points out that these fifty councilors choose the delegates to the State Society, while the general membership of over 2,000 has nothing to say in this selection. This criticism sounds queer coming from the mouth of the Editor. He doubtless forgot when he made it that the House of Delegates of the Illinois State Society, a hundred men more or less, chooses and elects the delegates to the A. M. A., giving the general state membership nothing to say in the matter. Does the Editor insist that what he considers undemocratic in Cook County's method of representation in the State Society is acceptable for the State representation in the A. M. A.? Are the Editor and his managers really ready to advocate direct election of Illinois delegates to the A. M. A. House of Delegates by the membership at large? This sounds strangely like a suggestion from a well-known Chicago member whose resolution to the same effect was so bitterly opposed by the Editor.

Cook County has inaugurated at home a broad and wholesome democracy during recent years, and is conducting its own affairs very admirably. It would be glad to have the friends from down the state come up, without notice, to attend any of its meetings and learn whether they are proud of this splendid unit of our state organization. The Editor may be sure that when the majority of our branch members in Cook become so far dissatisfied with the present representative methods of choosing delegates to the State Society, they will speak by referendum or through their Councilors, or otherwise, and certainly get what they want after ungagged discussion, and with no need of outside interference in these local affairs.

This amendment of Dr. Black would open the door for a dozen independent societies in Cook County, each irresponsible to the unifying principle which now makes the parent organization strong in her integrity and a source of pride to the whole state.

That any man, particularly Dr. Black, the chairman of the State Council, should introduce and advocate a measure apparently to disorganize Illinois' largest and most influential medical society is incomprehensible. The amendment is an attempt at class legislation because it strikes at only one county society; it assumes to invade the rights of that county and break into the uniform system on which our national organization is founded. A decent regard for the rights of each component unit in our inter-county federation should make any delegates shun the advocacy of this treacherous measure. If further argument were needed against this Black amendment, it is found in the multiple increased and therefore unfair representation which it would give to *Cook County*. For as proposed it does not disturb the present representation from Cook, as a *whole*, but adds to this the right of sub-groups in Cook to send separate delegates by special charter privilege, for membership in such branch county societies would not abrogate membership in the Cook County Medical Society; therefore, a member belonging to both would have *double delegate representation* to the State Society.

Upon motion duly made the report was unanimously carried.

GEO. F. SUKER, Secretary.

DR. OTHO BOYD WILL

In another column will be found the details of the testimonial banquet given to our colleague, Dr. Otho Boyd Will of Peoria, by his local society. It was a fitting tribute to the veteran physician, who had so long worked in the cause of organized medicine. Dr. Will was for many years the most active man in Peoria County connected with the State Society, and always stood for the best things in our profession. He edited the *Peoria Medical Journal* for many years, and wielded a trenchant pen in its editorial columns. It was a gracious thing to give



him honor now instead of after his death, and the banquet was a fitting tribute to him, as well as a great honor to those conceiving and carrying it out so successfully.

A MODEL SOCIETY REPORT

In another column will be found the notice of the annual meeting of the Winnebago County Society, held at Rockford, Jan. 9, 1912. This meeting followed the annual banquet, this feature being adopted by many of the county organizations with great benefit, as it results in the rounding up of a large portion of the members of the society, some of whom never attend except on such an occasion. The particular point of com-

mentation in the report was the reading of the proceedings of the previous year by Secretary Hanford. In this we have a bird's eye view of the excellent work done by the society in the twelve months; a list of the members in good standing, the trustees' report of the financial condition, the whole making a complete index for all time of the activity of this organization for the year 1911.

The society evidently appreciates the faithful work of the secretary, inasmuch as it appropriated \$50 for his services, and a vote of thanks being extended to all the officers for their services. The veteran Dr. Daniel Lichty was elected president. Secretary Hanford was reelected secretary-treasurer, and finally a man of high standing, Dr. W. H. Fitch, was elected delegate to the meeting of the State Society.

THE LEAGUE FOR MEDICAL FREEDOM STARTS A CAMPAIGN IN ILLINOIS

This organization, which we have had occasion to mention in previous issues of *THE JOURNAL*, is making an active campaign in the state of Illinois, under the leadership of one Joseph Mason, former Secretary of the Illinois State Board of Civil Service Commissioners. Mr. Mason is the gentleman who suddenly discovered that Dr. James A. Egan was entitled to a life job in Illinois, this being, we understand, about his last official act.

A public meeting was held at the Leland Hotel, Springfield, February 2, 1912, which we attended. The speaking part was taken by one who advertises himself as Professor Lewis Pinkerton Crutcher, First Vice-President of the League, and a member of the Hahnemann Medical College (Homeopathic) of Kansas City. Just here it might be wise to remark on the character of this college, since so much stress is laid on the fact that Dr. Crutcher is a member of its faculty.

Turning to the Education Number annually published by *The Journal A. M. A.*, we find that in 1910 and 1911 this school had forty-two students, and seven graduates; in 1909 and 1910 it had fifty-eight students and twenty-one graduates; in 1908 and 1909, forty-six students and fourteen graduates; that the tuition amounts to something like \$105, and the number of teachers between forty and fifty. The total income of the school is not more than \$6,000 per year. [A large portion of this meager income we should think would be required to pay the light, heat and janitor bill, sometimes necessary for the conduct of a college.]

On turning to the *Bulletin* of the Carnegie Foundation, we learn that this "college was organized in 1888; its entrance requirement is less than a high school education; attendance, 1909-1910, fifty-nine; teaching staff, forty-one; of whom thirty-three are professors, eight of other grade. Laboratory facilities: all laboratory work is conducted by one teacher, who serves in the same capacity in the local eclectic and osteopathic schools (the latter not in good standing with the Missouri State Board of Health); the chemical laboratory is small and poor; that for path-

ology, histology, bacteriology and embryology, urinalysis and blood work combined is worse—meagerly equipped and in utter disorder. The teaching of anatomy had not as yet started in November. There are few books. Clinical facilities: amphitheater instruction is given one morning a week at the City Hospital. In the school building is a small dispensary with an estimated attendance of six or seven a day. A neatly kept card index is employed. The date of visit was November, 1909.”

How the learned Professor Crutcher could possibly leave this faculty to take up the work of the League for Medical Freedom, and how the college could dispense with his services in teaching this large body of students is beyond comprehension, especially when we know there are only about forty teachers remaining to instruct the some forty matriculates at the school. The college must have paid each of the professors from its \$6,000 income a princely salary, which this one was of course obliged to give up when he took to the road for the League.

Mr. Mason endeavored to secure the services of a well known public official to preside at the meeting held in Springfield, but failing in this he was obliged to preside himself over an audience that numbered a little less than 100, about half ladies. Outside of those drawn by curiosity there were present representatives of all the sects, cults and obsessions known in the city of Springfield. Among these we noticed osteopath practitioners, Christian Scientists, homeopaths, one eclectic, a cancer specialist and a magnetic healer. The small attendance was the more remarkable since the lecture had been extensively advertised for a number of days, in fact, several weeks, and it was a pleasant evening.

Mr. Mason introduced the speaker by stating that the League was entering on a campaign of education to inform the people of the real reason for establishing a National Board of Health.

Dr. Crutcher began his lecture by stating that he would have something to say about physicians who are going about attending to other people's business. He stated that “the American Medical Association had been transformed into a political organization, and was not as formerly engaged in scientific work.” “This country will never be ready for the establishment of State Medicine.” “The right of the American citizen to select the practitioner of his choice or system is in serious jeopardy.” “The object of establishing a National Department of Health was first, to put out of business all the patent medicine men in the country; second, to put out of business all those who desire to practice sectarian medicine; third, to prevent 6,000,000 people from dying, and taking 3,000,000 from their sick beds. The men urging the National Department of Health failed to say how they were going to accomplish the third proposition, and Crutcher naively said if they can do this, why don't they do it now. He then went on to tell how he had prevented vaccination in Kansas City. “The health officer of that city began to vaccinate the school children, and before Crutcher heard of it nineteen children had been vaccinated; one of these died, and one lost an arm.” “If the citizen has the right to say what practitioner he shall have in the hour of sickness, he also has the right to say what practitioner he will not have in health.”

Certain men, according to the bill, were to be appointed as consultants and receive no salary. Crutcher asked what was the trick? Crutcher and others of his caliber evidently cannot understand how such men as Welch, Jacobi, Billings, Patrick, Walter Reed, Lazear, Stephen Smith, Osler, Lord Lister, Koch and others, have already given services worth millions to the world, for which they never received nor expected to receive a penny. Nor how men whose services could not be bought with money stand ready now, as they always have stood, ready to help in this campaign for the welfare of the race, notwithstanding the abuse heaped on them by people composing the League for Medical Freedom. The fact is the majority of people composing the League have been deceived into lending their names to this association of misinformation and when the Department of Health is well established and entered on its beneficent career will be heartily ashamed that they were so foolish as to be found in such bad company.

Correspondence

SOME OF THE APPARENT REASONS WHY QUACKERY AND ILLEGAL PRACTITIONERS FLOUR- ISH IN THIS STATE .

To the Editor: This state is so full of quacks and illegal practitioners that it is unnecessary—in fact impossible—to dignify each of them individually by naming them and referring to their work. “Cancer quacks” and so-called “rubbers” or rather a mixed breed of “rubbers” and “faith healers” combined in one and the same person, seem to be the choicest morsel just at present. As far as I have been able to learn, practically all of the so-called faith healers are really “rubbers.” The state seems to be full of them at this time judging from letters that have come to me from various sections.

Within our own immediate neighborhood we have the faith healer Smith at St. Elmo, 18 miles west of us, who now has over 2,000 people registered ahead, waiting their “turn” to get treatments; he charges \$1 each for the first thirty treatments every day and \$2 for each treatment given after the first thirty; also \$2 for treatments on Sundays and holidays, so I am informed. In fact, I recently heard that he had reduced his \$1 treatments to twenty-five in number each day, rather than thirty. Besides it is to be remembered that each and every one pays 25 cents to get their name registered in the beginning. This business has been going on, but to a less extent, for several years.

Effingham, as well, can boast of one. “Professor” Andrews, who styles himself a “faith healer” or “magnetic healer,” but who in fact, so I am told by patients, gives practically all of his treatments by rubbing. Kimmundy, 30 miles south, also boast as the home of a “rubber,” who is not so fortunate as Smith of St. Elmo, as he is compelled to make visits to other towns.

Dr. Egan was notified of this man's practice a good many weeks ago, but as yet I have not heard of any suit being instituted or of this man being especially frightened in anticipation of such. Trenton has a pair of fakers, a man and his wife, who visit towns in this section about once a month. They charge \$2 for each treatment, which consists of rubbing, and \$5 for absent treatment each month, until their next return. Sandoval also has a "rubber" in the person of a former coal miner, who has been visiting towns in this neighborhood, some of them, for five years. His treatment is practically entirely by rubbing; besides this, St. Elmo has two or three of the same class besides Smith, who have located there to catch his over-flow.

Every one of these fellows depends principally on rubbing as his means of treatment, if the statements of their patients are to be believed; all of them are charging from \$1 to \$2 for treatment, and all of them seem to have a great deal of patronage; as well, all of them are quick on promises to cure, and all of them are ignorant, non-medical, non-licensed and illegal practitioners, and according to reports which I have had from time to time, Dr. Egan has been notified of the practice of nearly all of these fellows.

Many of the physicians think that we should raise money between ourselves and prosecute certain of these illegal practitioners, but the fact is, the state is so full of them that there is nothing to be gained by jumping on to one of these fellows, while the others continue to flourish in business. These men are not to be blamed, as much as the system which allows them to continue in defiance of the law.

All such suits must be brought in the name of the State Board of Health, and as a rule the ordinary jury in the justice court can see no harm in the practice of such fellows, probably in spite of the law and evidence in the case, and as a rule they are not convicted. Then the suit must be taken on up through the courts; this requires some money, and a great deal of time, and from what information I have on the subject, the State Board of Health, through Dr. Egan, can dismiss the suit at any stage, and he gives as his reason, so far as I have been able to learn, that the State Board of Health attorney, in Chicago, has reviewed the evidence, and gives it as his opinion that it is useless to take the case further. There you are; you have probably failed to convict in the justice court, the illegal practitioner is turned loose, and this does nothing except to encourage this class of fellows.

This has been the extent of the prosecutions of illegal practitioners in our state for years, until at present the whole proposition seems to be a dead one. The state is full of cancer quacks as well, and I will here dignify one of them by name, simply to show "some of the reasons why quackery and illegal practitioners flourish in Illinois."

I wrote Dr. Egan about this man, Nov. 15, 1911, in part as follows:

There is a Wm. Garland living in Bingham, so I am told, who has been treating cancers with plasters for the past several years. To show you that this is true, he treated a W. C. Harris of Vera, Ill., for supposed cancer of the nose, five or six years ago. He treated an old man Crouch of Vandalia, from six months to

one year ago. This patient died about two months ago. The sons, James and W. C. Crouch, still live in Vandalia, and have knowledge of the treatment. Jack Laughlin, also in Vandalia, has been receiving treatment from this man Garland, for cancer of the lip and chin, for the last several months, and is probably still under treatment. A Mrs. John Oldham, also of Vandalia, has been receiving treatment for the last several months for an affection of the hand.

Now doctor, I have heard of this man through a great many different doctors in the last year; he seems to be practicing with as little fear as would a licensed practitioner. I do not know what he charges for his services, and from your standpoint, it makes no difference, but he is probably not doing all of this for the good of mankind.

In answer on November 21 I received a stale stock letter which said in part: "I have laid the facts as reported by you before Mr. Welker, State's Attorney of Fayette County, and have called on him to bring suit against Garland." A few days later I received from Dr. Egan a copy of a letter, which the State's Attorney of Fayette County had written him, and which is as follows:

[Copy.]

VANDALIA, ILL., Nov. 24, 1911.

Hon. J. A. Egan, Springfield, Illinois.

Replying to your letters of recent date will say that I have talked with two of the persons whom Mr. Garland is treating for cancer. My investigation discloses that he manufactures a salve which he sells and that is the extent of his treatment. The patient says the salve is effective. He does not diagnose a case or tell the patient when he has a cancer. When one wants to buy his salve, he sells it, and that is the extent of his practice. In regard to the faith healer, William Smith, will say that Doctor Buckmaster told me of Samuel Summer, but I have not had a chance to talk with him, as he lives without the county. But I have talked to some of Doctor Smith's very intimate associates and they say Smith never used a manipulation in his practice.

I will say further that no suit has been brought against Smith as I do not consider the evidence sufficient to warrant my bringing a suit.

Yours truly,

WILL P. WELKER.

Copy respectfully referred to Dr. F. Buckmaster.

This was not all; copies of this same letter were sent to other physicians in this neighborhood by Dr. Egan, apparently to justify his course of non-action in this case as well as in Smith's. I know this to be true, as several of these physicians sent their copies to me.

Had Dr. Egan really been interested in learning the truth of this man's practice, it would have been much better had he used the same stamps and time in writing to some other physician to learn the truth of Garland's practice. Instead, Mr. Welker's letter served Dr. Egan's purpose very admirably, and he hastened a bunch of copies of this letter out to the physicians in the neighborhood of Vandalia.

To learn the truth myself, I sent out a few letters to physicians in the territory worked by this man Garland, and the following are some of the replies which I respectfully submit to Dr. Egan through these columns, as well as to the profession of the state.

One physician told me that he notified Dr. Egan of this man's practice about five years ago, and he also told me that he knew another physician who also notified Dr. Egan about the same time, and I have received

letters from two others, who likewise say they notified Dr. Egan of this man's practice in the past, but as yet, as far as I can learn he has never even been brought into the justice court. In this connection on September 30, Dr. Egan wrote to a friend of mine in part as follows: "As long as Smith does not use manipulation or administer a drug, the State Board of Health is powerless. If, however, he practices medicine as defined by the statutes, action may be taken against him." Then how is Dr. Egan to get around such cases of illegal practice as Garland is doing, as shown by the following letters:

In assistance to you in your efforts to show the profession that unlicensed men are prescribing for patients and practicing medicine, I submit the following facts which can be substantiated in a court of law. Mr. Wm. Garland of Bingham, Ill., a non-licensed practitioner, was called probably three or four years ago to see Mrs. Mc., who was suffering with cancer of the mammary gland. Mr. G. promised a complete cure, then Mrs. Mc. refused the surgical services advised by her physicians. Mr. G. instituted treatment consisting of what seems to be an arsenic paste, for which he makes a charge of \$5.00 for a ½ ounce box.

Mr. G. made return visits at the call of the family, during which visits he advised the patient whether she should use more or less of the paste in accordance with his knowledge and past experience. He particularly advised her not to put any bland ointment, such as lard or vaselin about the tumor, as it would hinder the action of his preparation, and at one of his visits objected to my using morphin hypodermically, which I was occasionally using to relieve the intense suffering caused by his paste.

In consideration that Mr. G. made visits, suggestions, and furnished the medicine, would in my judgment make him liable under the present practice act of this state.

Mrs. B., a second patient, came to me about two years ago, with a small alveolar sarcoma about an upper second molar. I took from this tumor (which was about the size of a small hickory nut) a root of a previously extracted tooth. I advised the patient to go with me to St. Louis, and have the entire diseased parts removed, to which she readily consented, but upon the advice and solicitations of friends, she went to Mr. G. who promised a complete cure with his "famous cancer paste," so she consented to follow his persuasions.

She might have had a cure, but instead, she now has a mouth full of sarcomatous tissue, with an extensive involvement of the superior maxilla. She now has nothing to do but wait and meet death, a victim of circumstances of misapplied confidence, and of an unenforced law of a great state.

I could cite you numerous other cases of similar character treated by the same man, some who are still suffering the tortures of a "Nero," while others have passed beyond to rest from pain, I hope.

A second physician writes:

Your letter received this a. m. in regard to said Garland. Will say I know the gentleman. When he hears of any old sore, he makes a visit to the patient for the purpose of healing him. He tells them if they use his salve, it will cure the cancer (?); he also makes visits to advise how to apply the salve, when to stop using it, etc., and then follows it with advice to apply lard or vaselin to heal it. Garland charges \$5.00 per box. I will get definite evidence for you, if you wish, as there are several cases of his here that I know of.

A third physician writes:

In regard to Wm. Garland of Bingham, I am sorry to say I cannot give you much information. I know that he charges \$5.00 per box for his cancer ointment. I am also aware that he makes trips to patient's houses, but do not know whether

or not he charges for them. I do not think he has treated so very many cases around here, but so far as I have observed the results were very unsatisfactory.

A fourth doctor writes:

I received your letter of inquiry in regard to Wm. Garland. He has been treating cancers about 18 years. He sells his salve for \$5.00 per box; I have never heard of his charging more. He visits his patients when called on. He has the patient apply the salve as he directs until the cancer is removed.

A fifth doctor writes:

I know of Wm. Garland of Bingham, I know that some of my patients have gone to him and received treatment and will say that I reported this man one time.

A sixth doctor writes:

In regard to Wm. Garland I will say that I have known him personally about one year, but have known and heard of his doings for about ten years. I have been told many times that he had a diploma for doing his work; I mean the treatment of cancerous tumors. I just received a letter from Dr. Egan and in it a copy of Welker's letter to him. As near as I can determine he sells his ointment, and visits his patients and directs the use of it. I have never been able to learn his price for the salve, or his charges to the patients. I have seen the salve several times; it looks and smells like lard. He directs that they apply it lightly every day or two till the growth or tumor eventually sloughs off.

A seventh doctor writes:

He uses an ointment which I understand he claims to be purely vegetable. This ointment is spread on a cloth and applied to the diseased parts. A farmer, a patient of mine, had a suspicious place on his left temple, which I advised him to go to the St. Louis cancer hospital for, offering to go with him. Some of his friends advised him to go to Garland, which he did. He treated him several months, and visited him, telling him the same story (that it would kill the cancer and that it would then drop out). Whether he charged him for the visits, I do not know, but could ascertain. This patient lived about a year and a half or two years. The whole side of his face was eaten off before he died. He always tells them they have cancer, and that if it is cancer, his medicine will cure, otherwise it will have no effect on him. He goes—so I am informed—about over the country hunting up cases wherever he can hear of one. He has certainly caused a great amount of suffering. He is an ignoramus as well as the most arrant quack.

An eighth doctor writes:

Wm. Garland came here once to see one of my cases who had cancer and from what I can learn he gave directions how to use the ointment as any physician would. This man did not use the salve but went to the free cancer hospital in St. Louis and was operated upon. Another man went to see him who had no cancer, but had seborrhea of the face. This man had a pretty sore face for a time as a result of the treatment. I have been told that Dr. Egan has issued this man a permit to treat cancers, but that is only hearsay. There is no question but that this man is practicing medicine.

A ninth doctor writes:

Garland was in our city some two or three months ago and treated a Mrs. K. for cancer. I notified Dr. Egan and he replied that he had notified the prosecuting attorney of Fayette County, Garland's home. I do not think anything further than that was done. I also know of a case here that Garland treated two or three years ago. I hear from neighbors of these people that he used to give this ointment free, but there is now such a demand for it that he charges \$5.00 per box.

The following and last letter that I will refer to shows that this man has charged for his visits:

Mrs. E. K. of this city is under the care of Wm. Garland. He charges \$5.00 for his ointment, and \$5.00 per visit and comes whenever they send for him. This information is direct from Mr. E. K., the patient's husband. I have never reported him—never knew his name until recently. Have heard of him for several years and am sure he is liable under our state law. There are a number of other cases around here and if I can obtain definite information, will be glad to send it to you.

It is easy to understand State's Attorney Welker's motive for finding this man Garland "not guilty," but why Dr. Egan should have been deceived (?) so easily in this matter, and thus have sent out copies of Welker's letter to physicians most likely to be interested, as he did, is quite a different problem, especially considering the fact—and fact it is—that he had been notified of this man's illegal practice by other physicians, one having told me that he had reported Garland to Dr. Egan about five years ago. What has been done to put him out of business as a "cancer doctor," thereby protecting the ignorantly confiding public against the purely mercenary ravages of one of the lowest types of human parasites that ever infested a sick man? That this condition exists all over the state is true; why?

Dr. Roane, councilor for this district, stated before the members of our county society on January 9 that there were over 4,000 illegal practitioners in this state, and this could not include all of the "little fellows" in the business.

Missouri has recently begun a "house cleaning" of her quacks and irregulars, even to the Christian Science healers, under the following supreme court decision, rendered by Judge Ferriss: "The practice of medicine is not confined to the administration of drugs; nor is surgery limited to the knife. When a physician advises his patient to travel for his health he is practicing medicine. Broadly speaking, one is practicing medicine when he visits his patient, examines him, determines the nature of the disease, and prescribes the remedy he deems appropriate." As our neighboring states drive their quacks out, they hit for Illinois, where they find our law enforcement easy pickin'. Our record in this matter is probably exceeded only by the one made by Dr. Egan in a sanitary way recently when he refused to accompany Dr. McCormack, secretary of the Kentucky State Board of Health, on a tour of inspection of the water, milk and meat supplies, sewage disposal, and of the other general (in)sanitary conditions of one of the small cities in southern Illinois, in November, both of these gentlemen spending the entire day in the town, Dr. McCormack making the tour of inspection alone, however; also of his refusal to accompany Dr. McCormack on the latter's inspection and lecture tour of Illinois about six years ago.

The question is: How much longer will the profession of this state tolerate the present conditions? In our fight for better conditions in the state, we should not overlook the great work being done by *Collier's Weekly* against the patent medicine frauds, in a series of articles begun in the issue of January 20. In view of their past record as well along this line, they should have the moral, as well as the financial support of every physician throughout the land, and none should fail to read these articles.

Fraternally yours,

F. BUCKMASTER.

Jan. 22, 1912.

COUNTY AND DISTRICT SOCIETIES

ADAMS COUNTY

The Adams County Medical Society met in regular session on Monday, January 8, at 11 a. m. Those present were: Drs. Pittman, Ball, Nickerson, Christie, Wells, Kirk Shawgo, Brenner, Center, Bloomer, Pearce, Ericson, Ray, Mercer, Koch, Stine, Montgomery, Zimmerman, E. Williams, Irwin and Knox.

Under the heading "Reports of Committees," Dr. Nickerson stated that the school board were anxious to have the school children examined if possible. Some of the members felt that the physicians should be compensated for their work. The superintendent, Mr. E. G. Bauman, explained that under the present school law, the board had no power to set aside funds for the purpose of medical inspection, and asked the society in its generosity to kindly cooperate with the board again, by volunteering its services as was done last year. After some discussion the matter was left with the present committee.

Dr. Nickerson reported the matter of the phone consolidation, as having made rapid progress during the past month. He thought it would be only a matter of time until Quincy would have a single telephone system.

The board of censors having made a favorable report on the application of Dr. C. I. Tripp, the result of the society's vote was the unanimous election of Dr. Tripp to membership.

In the afternoon Dr. D. G. Stine read a most interesting and instructive paper on "The Diagnosis and Treatment of Functional Nervous Diseases." Each and every member enjoyed this carefully written essay, which was illustrated by a chart. The various points being explained in this way.

Those taking part in the discussion were Drs. Pearce, Nickerson, Center, Williams, Christie and Pittman.

Adjourned.

ALEXANDER COUNTY

The Alexander County Medical Society held its annual meeting in the Commercial Club Rooms, in Cairo, December 21, at 8:00 p. m. An interesting case of tumor of the neck was presented by Dr. Cary. Each member was requested to examine the patient for himself, write his diagnosis over his name on a slip of paper, and hand the same to the secretary. This was done. The majority was of the opinion that it was an aneurism with some enlargement of the thyroid, but the minority held to the opinion that it was a goiter, with possibly slight aneurism. The discussion that followed was very interesting and profitable. The secretary's report was as follows:

Number of physicians in the county	40
Number eligible to membership in the county society	22
Number added during the year	4
Number lost	1
Net gain	3

He also reported on the McCormack meetings which were held on afternoon and evening of November 29. A large number of physicians of this county and surrounding counties in this State, Kentucky and Missouri, attended the meeting for doctors only, in the afternoon, and a crowded house greeted the speaker in the evening. Dr. Green, the secretary of the committee of the A. M. A. under whose auspices Dr. McCormack worked, had written that the doctor thought his Cairo meetings among the best he had ever had. Much good was done by the doctor's visit.

The following officers for the year 1912 were duly nominated and elected: president, Dr. J. B. Hibbitts; vice-president, Dr. Flint Bondurant; secretary-treasurer, Dr. James W. Dunn; member board of censors, Dr. A. A. Bondurant. The society then adjourned to enjoy a luncheon.

BROWN COUNTY

The regular quarterly meeting of the Brown County Medical Society was held Wednesday, Jan. 10, 1912, in the courtroom at Mt. Sterling, Ill. The following officers were elected: President, D. W. Owens, Hersman; vice-president, E. C. Allworth; secretary and treasurer, William Parker; delegate to state convention, E. C. Allworth; alternate, William Parker; member board of censor (3 years), R. C. McGann, all of Mt. Sterling. Dr. R. C. McGann's application for membership was acted on, and he was unanimously elected a member of the society. The following resolution was considered and passed unanimously:

WHEREAS, Notorious fakers are from time to time stopping in our county and boldly advertising their marvelous ability to cure disease, and thereby many credulous persons are fleeced of amounts which aggregate thousands of dollars every year, resulting in the benefit of no one but the faker himself; therefore

Resolved, That it is the sense of the society that Brown County papers should reject the advertisements of medical tramps as they would those of any other known swindlers, as the papers of many other counties of Illinois are doing. Worthy and competent practitioners of medicine, whose object is for the public good, instead of fleecing their patrons, have all the work they can do of a legitimate character, at and from their permanent offices, and such public advertising of his ability is positive evidence that the person doing it is a charlatan.

CHRISTIAN COUNTY

The Christian County Medical Society met at Taylorville, Jan. 19, 1912. The following officers were elected: President, Dr. J. H. Miller, Pana; vice-president, Dr. C. A. Stokes, Edinburg; secretary-treasurer, Dr. D. D. Barr, Taylorville; delegate to state convention, Dr. G. L. Armstrong, Taylorville; alternate, Dr. T. A. Lawler, Taylorville; legal committee, Dr. J. N. Nelms, Taylorville; public health, Dr. J. P. Simpson, Palmer.

COOK COUNTY

CHICAGO MEDICAL SOCIETY

Regular Meeting, Nov. 15, 1911

A regular meeting of the Chicago Medical Society was held Nov. 15, 1911, with the president, Dr. Joseph M. Patton, in the chair. Dr. E. W. Bentzein demonstrated a "Case of Mediastinal Tumor" with specimens and slides. The program for the evening consisted farther in a Symposium on Chronic Focal Infections, including the following papers: Dr. Frank Billings read a paper on "Etiologic Relationship to Affections of Heart, Kidneys and Joints." Dr. D. J. Davis read a paper on "The Bacteriologic Findings and Experimental Animal Inoculations." Dr. Thomas L. Gilmer read a paper on "Oral Infections." These papers were discussed in common.

DISCUSSION ON THE SYMPOSIUM

Dr. Robert H. Babcock: It was gratifying to hear what was said of chronic tonsil infection, because I have for many years insisted on the removal of diseased tonsils. It has been especially impressed on my mind with reference to the liability of acute exacerbation of chronic endocarditis, and I believe that the family physician who has charge of children with chronic valvular disease is guilty of neglect if he does not keep his attention riveted on the throat of the

child and insist on the enucleation of diseased tonsils. I especially commend what Dr. Billings said as to the necessity of performing a complete operation. It is wrong to clip off the tonsils. They should be enucleated.

With reference to chronic gall-bladder disease, we must recognize that a chronic cholecystitis, with or without gall-stones, may cause chronic systemic disease. Many physicians seem to think that chronic cholecystitis need not be dealt with surgically when there are no symptoms of gall-stone colic. That is a mistake. Constitutional symptoms from chronic cholecystitis may be made to disappear very quickly following drainage of the gall-bladder. This subject is important because of the effect of gall-bladder disease on the heart, especially a heart which is showing evidence of myocardial inadequacy. Many hearts will remain competent even though degenerated so long as they are kept free from conditions which seriously embarrass heart action, such as attacks of acute indigestion or chronic indigestion resulting from gall-bladder disease.

Dr. Billings also spoke of the influence of chronic appendicitis on heart action. I have recognized chronic appendicitis as a cause of cardiac disturbance. The heart trouble disappeared entirely after the appendix was removed. I have also seen cases where a chronic infection of the female genital organs, such as pyosalpinx, has seriously embarrassed heart action, even to the extent of incompetence and other cases whose symptoms produced such a disturbance of the heart action, that the organ threatened to break down. The subject has interested me for years. It should teach us not to be satisfied with the recognition of such a thing as a chronic muscular rheumatism or chronic articular rheumatism. We should endeavor to search out the etiologic factor and have it removed. We are prone to hesitate to recommend surgical interference, but it is our duty in cases of chronic tonsil disease or chronic cholecystitis or chronic appendicitis to recommend surgical intervention, even though the recommendation may not strike the patient as very happy.

Dr. R. B. Preble: We must all agree that this group of cases has not received the attention which it deserves and this is the more remarkable because consideration of other clinical and experimental observations would lead one to expect just such cases as Dr. Billings has described. Everyone is familiar with the many cases in which we see remote toxic effects from local infectious processes such as the neuritides and nephritides following pharyngeal diphtheria. We are also familiar with remote effects from chronic intoxications such as the neuritis of chronic alcoholism and the nephritis and neuritis of chronic plumbism.

It would seem likely true that we might see chronic toxic effects from chronic local infections. That such cases have been overlooked is easily understood, for the relation between a low grade chronic local infection causing little or no local disturbances and a serious remote toxic effect such as an arthritis is not obvious.

There are two other groups of cases which should be included here, one common and to my mind very important, the other less frequent and therefore not so important. The first includes the many examples of anemia and malnutrition in children so promptly cured by the removal of the tonsils and adenoids.

The second includes some of the cases of angioneurotic edema. This group is interesting but not of great importance.

There is an old French *bon mot* to the effect that it is the duty of the consultant to examine the rectum. One can say with equal truth that equal attention must be given by the consultant to the nose and pharynx.

Dr. James B. Herrick: I wish to endorse what Dr. Babcock said in regard to the importance of studying the tonsils of children who have endocarditis. If the tonsils are found to be diseased and are removed, some of the acute exacerbations and some of the later serious and malignant forms of endocarditis may be avoided. He also referred to the fact that pelvic inflammation in women may be the cause of cardiac disease. It has seemed to me, but I cannot prove it, that some of the cases of mitral stenosis so frequent in women have perhaps been due to old pelvic inflammation. Dr. Billings has well said that while we recognize the close relationship which exists between the acute focal infections, and the more distant or systemic infections, the importance of chronic focal infection is not

sufficiently recognized. One reason for this is that these chronic foci are frequently latent, and do not present any plain evidence of inflammation. That the tonsils are not always enlarged in the ordinary sense is well-known; the same is true of the gall-bladder. The offending prostate also may harbor gonococci, and yet give rise to few local symptoms. It is incumbent on us to search with care for even slight evidence of local trouble to explain some of these otherwise inexplicable cases of arthritis. I was glad that Dr. Billings does not favor the wholesale removal of tonsils for the purpose of effecting a cure of endocarditis, nephritis and arthritis. Only after the most careful study of the individual case should any surgical procedure be resorted to. Otherwise there will be much disappointment at results.

I was interested in Dr. Davis' report of his bacteriologic work. I would make the suggestion, not, however, in the way of criticism, that, if possible, the experimental work should imitate more closely the clinical conditions. Nearly all the animals had acute septicemia and acute suppurative arthritis. In Dr. Billings' cases the causal conditions were chronic and the results chronic arthritis or chronic nephritis. It is difficult in experimental work to imitate a chronic condition, but if it can be done, it would certainly prove valuable.

Dr. B. W. Sippy: I have seen two cases of general infection associated with purpura and swelling in two or more joints in which the etiology seemed very clearly to be pyorrhea. Negative blood cultures were made in both cases. In one of these cases culture from the knee joint was attempted but also proved negative. I have seen a third case of general infection resulting from pyorrhea. The patient had a temperature for eight weeks and a diagnosis of tuberculosis had been made. The temperature cleared up rapidly after the suppuration about the teeth was controlled. Most of us have seen joint infection complicating otitis media.

As has been stated serious general infection may take place through a tonsil that may appear to be fairly normal on simple inspection. Very recently I observed a case of general septicemia resulting in death in four days. Although the tonsils did not seem inflamed the patient admitted upon questioning that a few days previous to the onset of the initial chill the throat had felt a little raw one evening. At the post-mortem an abscess no larger than a good-sized pin-head was found deep in the tonsil and very likely the general infection took place from that focus.

Dr. Geo. E. Shambaugh: The impression still seems to be held by many that a diseased tonsil is always an enlarged one. This seems to be more commonly true in the case of children than in adults. It is only very recently that anything more was undertaken for the relief of tonsillar trouble than the removal of the enlarged tonsils. Other procedures, such as cauterization, etc., which were occasionally employed from time to time, usually made conditions much worse. Most of the cases referred to by Dr. Billings, where the tonsils were held responsible for focal infections, occurred in adults. In these cases we often found a distinctly enlarged tonsil but very often, too, the tonsils were quite small. In these cases a superficial examination of the throat might give the impression that tonsils were absent or so insignificant as to be of no importance. When the anterior pillar was forced to one side and the tonsil pulled out into the throat, very distinct evidences of a pathologic condition came to view. Often, too, the tonsils showed distinct evidences of a previous enlargement but had undergone decided shrinking. In these cases the base of the tonsil appears large while the surface has a distinct granular appearance not showing the usual follicles. The granular surface appeared to be the result of hypertrophy of connective tissue which on shrinking has squeezed the parenchyma into little nodular knots. Sometimes the patient has not been aware of any distinct attacks of tonsillitis, yet pockets containing pus are discovered at the time of the operation. It has been a surprise to me to see how small a tonsil may become and yet be the source of a great deal of trouble. The small size in these cases often appears to be the result of repeated attacks of inflammation. In one case which I saw this summer in a woman between 50 and 60 years of age, there was a history of acute attacks

of tonsillitis many times every year for a great many years. During the past winter she had had eight distinct attacks. When I suggested to her that the tonsils could be removed and this trouble ended she expressed surprise that this could be done since she had been told years before that small tonsils, such as hers, could not be taken care of by an operation. In dissecting out these tonsils they were scarcely any thicker than a slate pencil. In another case that I operated on this fall the tonsil was of the same small size and bound down so firmly to the underlying tissues that it was not at all easy to remove it even with our present methods.

As regards the operation itself for the removal of these tonsils, it is quite clear that any operation with a tonsillotome is usually out of the question. The tonsils have to be dissected out. To accomplish this the specialists have devised all kinds of instruments, as you can ascertain by examining the supplies in an instrument store. I have found the best instrument for this purpose is a small blunt-pointed scalpel. While it may be possible for one to remove the tonsil with any of the various devices that have been invented, provided one experiments with it long enough, there is no instrument so satisfactory as a scalpel for careful, exact work. In children general anesthesia is necessary. We always give ether and have an expert to give the anesthetic. In adults it is the exception to resort to a general anesthesia. It does not matter how nervous the patient is, if one is skillful it is possible to enucleate the tonsils under a local anesthesia. We swab the tonsil with 5 per cent. solution of cocaine made up in 1-5000 suprarenalin, but in order to get a satisfactory local anesthesia it is necessary to make an injection around the tonsil. Cocaine must not be used for this purpose as it is too dangerous. I began by using 1-200 solution of cocaine but always had a very decided depression after injection of a moderate amount of this weak solution. For over two years I have employed only a solution of novocain. I use the 1-200 solution to which is added a few drops of suprarenalin. The local effect can be increased by a hypodermic of morphin twenty minutes before operating. The operation should only be done in a hospital.

Dr. Norval H. Pierce: No tonsil should be enucleated unless there is local evidence of disease, or a definite history of previous inflammation or glandular enlargements. Of my own knowledge lives have been endangered in the removal of entirely innocuous tonsils. I believe that we are likely to exaggerate the importance of the tonsil pathologically in the production of disease. An eminent man, a teacher, once said that the most dangerous tonsil is the most innocent-looking tonsil. When one permits his mind to travel in this direction he is well on the way that leads to fanaticism. A diseased tonsil can be seen to be diseased. Is there elsewhere in the body a portal of infection that does not give some sign when infection is taking place? By carefully exploring the depths of the tonsil, we can find diseased lacunæ which may harbor germs, or cholesteatomatous tissue, no matter how innocent the tonsil may appear. If these are not present, I do not believe that the tonsil should be removed, because, as Dr. Billings said, an operation which falls short of complete enucleation is worse than no operation at all, and if we enucleate a tonsil, the operation is of some gravity. It is grave from the standpoint of hemorrhage, shock and sepsis. It is my experience that it is more difficult to enucleate a small tonsil than a large one. Two cases during the last year occurred in my practice which are vivid examples of the futility of incomplete removal. Two young men had attacks of acute articular rheumatism; one of them had had two operations on the tonsil. The other a single operation. I found their pharynges occupied by a mass of scar tissue encasing the buried, hyperemic stumps of the tonsils from which cholesteatomatous masses could be pressed. The previous operations apparently had had no effect on the rheumatism. The attending physician directed that I remove the stumps. This was done under general anesthesia. The patients have not since had an attack of articular rheumatism, although one of the young men had slight soreness of the ankle joints immediately after the operation, while still in the hospital.

To enucleate the tonsils the patient should be put to sleep and all the time necessary taken for their complete removal. My experience with local anesthesia has been very disappointing.

I could give many examples from my case-book of instances where diseases of the nose, throat and ear have furnished the primary nidus of a chronic insidious form of general poisoning but time will not permit.

Dr. R. H. Brown: I have been very much interested in this subject. I am glad to see that the profession is waking up as to the cause of many of these conditions. The large tonsils are by no means the most important. I have often found that diseased tonsils are overlooked by the general practitioner, because they may be submerged, where a membrane covers over the space between the pillars, effectually damming back the secretions into the diseased tonsil. Unless one probes the crypts carefully, evidence of disease will not be obtained. A case occurred in my own family. My boy had had repeated attacks of endocarditis and rheumatism, which endangered his life. I examined his tonsils repeatedly, but found nothing. One day he complained of a scratchy feeling in his throat. I examined it, and saw some cheesy deposits on one tonsil. The next day he had an attack of endocarditis. I removed this tonsil, but found it negative. Later I removed the other, and found three encysted masses. That was three years ago, and the boy has not had another attack of rheumatism or endocarditis.

A patient of mine died recently of an old heart trouble of about fifteen years' duration, which had been treated as an intestinal toxemia, with no result. A blood examination showed a pneumococcus infection, and a diagnosis of infectious endocarditis was made. When I saw the patient first, about a week or ten days ago, I found a chronic inflammation of the anterior sinuses, which had existed long before the first attack of rheumatism. A smear showed the pneumococcus.

These cases are easily overlooked, because they are not examined carefully by the family physician. A fellow practitioner cured an intense case of recurrent boils by treating a bad pyorrhea. Another case of pyuria was similarly cured. I have drained sinuses and removed tonsils and cured rheumatism, but we must be careful not to go to extremes in this matter. The physician should warn the patient about the gravity of these so-called slight operations. They are not slight; they are grave.

Dr. J. G. Wilson: In discussing the relation of focal infection to disease elsewhere I shall confine my remarks strictly to the question of etiology, and to focal infection in and around the pharyngeal cavity.

The subject has been introduced by Dr. Billings in so masterly a way and with such a wealth of related cases, that one cannot but be convinced that there is here a subject well worthy of the careful investigation Dr. Davis has given to it. The relationship which Dr. Billings insists on has been so amply confirmed by Dr. Gilmer and the others who have spoken, that it seems to me there is sufficient clinical evidence to lead us to believe that a focus of infection *anywhere* in connection with serous or mucous surfaces, may result in arthritic or cardiac affections. Further that the removal of such a focus is often followed by the amelioration of such affections. This is quite in keeping not only with the experimental findings of Cole and other observers but also with the careful work Dr. Davis reported to-night. These results demonstrate that streptococci derived from various sources may produce arthritis and endocarditis in rabbits. Further it would appear that the channel of introduction is of minor importance. At present the evidence seems to me to suggest the association of various organisms with the relationship rather than a special microbe; I feel convinced that the work that Dr. Davis is doing, will help to clear the fog that surrounds this question.

It is to be expected that we should find such examples to abound in connection with chronic foci of infection in the nose, mouth and pharynx, where all varieties of streptococci are found in abundance. It must be admitted that a chronic focal infection of the tonsil like any other chronic focal infection, is capable of causing arthritic and cardiac affections. But the frequency of the focal infection in the tonsil and the infrequency of a concomitant or subsequent arthritic affection speak against the relative importance of such a seat and suggest that some other factor has to be taken into account.

The tonsil is not a lymph gland but an organ having important relations to surrounding tissues. Its disease or physiologic inactivity, especially in children

and young adults, results in a widespread alteration of the pharyngeal wall and renders the whole pharyngeal tissue more liable to chronic inflammatory attacks. Amelioration of arthritic or cardiac affections following removal of diseased tonsils, does not prove that this result was due directly to a diseased focus in the tonsil, for its removal has improved the surrounding tissues. Time does not permit me to dwell on these points.

Were one to attempt at present on clinical evidence to restrict the field of chronic diseases having this sequence, my experience would lead me to believe that chronic suppurative lesions in the nose, mouth and pharynx are not so likely to be associated directly with arthritic pain as is a low grade of inflammation of the pharyngeal wall. Such a catarrhal condition is well recognized, is apt to be aggravated by cold, and often is associated with disease or physiologic inactivity of the tonsillar tissue. This is in keeping with experimentally found conditions, for it was a low grade inflammation of the joints which the streptococci injected by Cole set up, and it was this variety of joint affection which Beattie found was aggravated by cold. The secretion in the joint is described by Cole as turbid, sticky and tenacious, often with no bacteria demonstrable. In this respect it is similar to the secretion I have produced experimentally in the frontal sinuses of dogs associated with a streptococcus*toxemia.

The cases I have observed divide themselves roughly into two groups: 1. with a remittent type of fever, with tendency to acute exacerbations suggesting the presence of microbes which develop their toxins slowly; 2. with a slow progress from bad to worse, with little or no fever, corresponding more to the process of sub-infection which Adami has described, a special susceptibility to the absorption of attenuated forms of pathogenic organisms. The results in the first group from local treatment have been very satisfactory, immediate and permanent relief has often followed removal of diseased or physiologically inactive tonsils. The results from the second group have been disappointing. Sometimes amelioration for a time but ultimate relapse has followed appropriate treatment of diseased areas.

Lest a fallacy creep into our deductions we must, as Dr. Billings has said, allow a sufficient time to elapse before we draw our conclusions. Clinical observation and experimental evidence show that for very little or no observable reason the symptoms of arthritis are apt suddenly to disappear for a time.

Dr. A. M. Corwin: The value of these papers (Billings and Davis) is great, and is in no way minimized because the matter with which they deal is not new. The literature of modern laryngology fairly teems with similar investigations, linking the tonsil with joint and internal organs and general and regional infection, chronic and acute. Laryngologists have been for years hammering upon the importance of the tonsil as an open door to serious and fatal disturbance. It is high time that the internist and the general surgeon wake up to the serenade and join in the chorus.

We have had too little emphasis placed on the seriousness of these throat conditions by general practitioners. Take, for instance, a case of tuberculosis of the lymph nodes of the neck, such as our surgical brethren frequently take out again and again and leave the tonsil. Surgeons are just beginning to look on the inside of the mouth. Removing the tonsils as well as the glands often results in a speedy subsidence of the local tuberculosis. Removal of tonsils without operating upon the enlarged cervical glands has not infrequently been followed by their subsidence, but to cut out cervical glands and ignore the tonsils is to put out the incendiary fire without arresting the "firebug."

Speaking of the tonsil, we must remember that the term follicle, as used by one of the gentlemen, does not refer to the crypt, but to the lymph structure which surrounds the crypt. The follicle is the doughnut; the crypt is the hole. The tonsils should be enucleated and not cut off. Tonsillectomy is the only operation to consider. It is essentially a hospital measure. I believe that the time will come when the pediatrician and the family physician will look to the future of his child patient by advising the early removal of tonsils, when the operation is really a simple one, and the danger small, in order to prevent future trouble, local and systemic infection, which frequently do not come on until later in life.

We cannot gauge the disease of these organs by their size or prominence. The innocent look on their faces is no criterion of the devilry that lurks beneath, deep in their crypts. The buried tonsil is apt to be the chief offender.

Dr. John Ridlon: I have seen one case where a multiple hypertrophic osteoarthritis of ten years' duration was due to disease of the teeth and alveolar abscess. I have seen a case of stiff back diagnosed as tuberculosis, of nine months' duration, cured in three days by the removal of a tonsil which contained an abscess as big as a hickory-nut. Another case of stiff back diagnosed as tuberculosis by an eminent surgeon was found to be due to a gonorrhea contracted and believed to have been cured twenty-five years before. Dr. Billings demonstrated the gonococcus in the strippings from the prostate and seminal vesicles. An osteoarthritis can exist and show no evidence in the *x*-ray picture for months. It must be differentiated from a tuberculous joint, often without the aid of the *x*-ray picture. I would also call attention to the fact that we must be a little sharper and clearer in differentiating between osteoarthritis and tuberculosis in children, because children do have osteoarthritis when we think it is a tuberculosis.

Dr. Billings (closing): The discussion centered itself on the tonsil, although the paper was on focal infection anywhere, although most of the work was done with the tonsil. If the tonsil is removed, it must be done thoroughly. It is an operation of importance, and the hospital is the only place to do it. The operation requires skill and it may be dangerous. When we discuss infections about the mouth and tonsils we must not forget environment. In the throat of nearly every individual there are present pathogenic germs. The Commission on Respiratory Diseases of New York, of which I had the honor to be a member, examined a series of people. Here there were examined ten nurses, ten interns, ten patients at the County Hospital, ten at the Presbyterian Hospital, ten men down town in offices, ten men on the streets, and ten out in the country. Every individual in Chicago had pneumococci and other bacteria in his nasopharynx, while only three or four from the rural districts had pneumococci. Therefore, environment is important, and we must consider this. While the removal of the tonsil has done much good in these cases, it is important not to overlook the good effect of wholesome food, sunshine and iron. Of course, if the source of the infection is not located, these individuals will grow worse in spite of the other treatment.

I have conducted this work for five years at my own expense. The Otho S. A. Sprague Memorial Institute has given us nine beds at the Presbyterian Hospital, and any persons who suffer in this way will be treated there free of charge. I am glad that the subject has proven so interesting.

Dr. Otto T. Freer: While differences in regard to immunity against systemic infection from tonsillar foci exist, the pathologic conditions in the infecting tonsil and especially those which it creates in its bed (tonsillar fossa) seem to me more important in determining whether septic matter enter the body or remain excluded from it.

A sound tonsil with sound crypts will not be a focal source of infection and such tonsils should not be removed on the theory that while the tonsil and its surroundings show no disease, pathogenic germs are passing through its follicles and exciting chronic arthritis, nephritis or other diseased condition present. I mention this because I know of instances where such innocent tonsils have been condemned to excision because the patient had rheumatic symptoms.

The tonsil does not differ from any other part of the body in its reaction to infections and streptococci penetrating its structure can not enter the general system without previously causing inflammatory changes in the tonsil itself, or, if retained in its follicles, without leading to inflammation and occasional abscess formation. The tonsil does not possess an especial property of harboring and giving passage to virulent micro-organisms while itself escaping infection, so I do not approve of the removal of apparently normal tonsils on the ground that perhaps there is some undiscoverable focus of infection in them. Pathologic changes in an organ so palpable and visible are always evident and should be the only reason for its removal.

The pathway followed by acute infections of the tonsils shows the manner in which chronic foci create general infection. These acute infections are superficial and deep. The superficial infection is the well known tonsillar folliculitis, which ranges from a mild innocuous follicular catarrh to inflammatory destruction of the epithelial lining of the crypts and its transformation into false membrane, the protection against spread of the infection offered by the epithelium being thus removed and the inflammation invading the parenchyma of the tonsils, which inflames and becomes hard and swollen, with general infection of the organism through the vessels and lymphatics shown by the usual mild septic fever of tonsillitis. It is this type of tonsillitis which is liable to create acute arthritis, the more so the more the parenchyma is involved. While the whole process in follicular tonsillitis is a superficial one and tends to recovery, it may lead to chronic folliculitis with inflammatory hypertrophy of the tonsil and thus be a source of chronic infection. It is characteristic of the normal and simply hypertrophied tonsil.

A different and more deep seated and formidable condition exists where the local resistance of the tonsil is reduced by the pathologic changes of chronic desquamative folliculitis which leads to tonsillar atrophy and distortions and cicatricial closure of crypts. The chronic epithelial proliferation characteristic of this process creates the well known tonsillar concretions of foul epithelial matter which may accumulate in a follicle with narrowed exit and are the source of deep follicular abscesses, which because of obstructed drainage are inclined to burrow so that they finally granulate through the tonsillar capsule into the tonsillar fossa. When this occurs there is a violent inflammatory reaction in the form of the well known peritonsillar abscess. This process is especially common in the upper pole of the tonsil, the velar lobe of Casselberry, which has follicles opening into the supratonsillar fossa, which in itself offers imperfect drainage. The matter may end with the discharge of the abscess, but a discharging fistula or ill drained granulating pocket may remain which from time to time creates a new abscess. It is these chronic abscesses, which lie in the tissues beyond the tonsil, that are especially dangerous in respect to focal infections, for not only is drainage bad but epithelial protection is replaced by granulations and septic absorption easy, for the pus lies deep between the muscles of the palate beyond the barrier of protection against infection offered by the tonsillar capsule. Such chronic peritonsillar abscesses or inflammatory foci are analogous to the chronic root abscesses so beautifully shown by Dr. Gilmer. During the interval between acute suppurative onsets such tonsils covering deep septic foci may appear normal on inspection, but often show evidences of chronic peritonsillitis in the form of swollen pillars of the fauces and *all of them, if palpated, will be found sensitive*, the pain recalling that of the acute abscess to the patient. Probing the follicles may find pus or nothing, palpation is the best mode of examination in such cases.

As evidence of the protection against infection offered by intact epithelium the nasal accessory sinuses should be mentioned which cause no general infective symptoms in my experience, unless the purulent process penetrate the walls of the sinus and lead to caries and abscess formation. For instance, it is surprising how little trouble is caused by putrid pus in an intact maxillary sinus, and the mere academic mention of the accessory sinuses to-night shows of how little moment they are as sources of general infection as compared to the tonsils.

Regular Meeting, Nov. 22, 1911

A regular meeting of the Chicago Medical Society was held Nov. 22, 1911, with the president, Dr. Joseph M. Patton in the chair. Dr. David Lieberthal gave a "Dermatologic Clinical Demonstration." Dr. Alfred C. Croftan read a paper on "Five Years' Experience with the Salt Free Diet in Bright's Disease and Allied Conditions." Dr. Ralph W. Webster read a paper on "Auto-Intoxication."

DISCUSSION ON THE PAPER OF DR. CROFTAN

Dr. Jos. L. Miller: The restriction of chlorid not only reduces the edema of nephritis but transudates and exudates of other origin, such as those of cardiac

disease, portal stasis and inflammation in general. So that it is apparent that it is not entirely due to the inability of the kidney to get rid of salt that this occurs. Some rather interesting experimental work has been done on the relation of chlorids in nephritis associated with edema. We find that while the animal is unable to eliminate salt taken in by mouth, if injected into the renal artery the salt is eliminated rapidly. In other words, the salt is retained in the tissues and fails to reach the kidneys. If it reaches the kidney it can be eliminated with a fair degree of readiness.

The question of edema in nephritis is a most interesting one. It has been studied rather carefully experimentally for the past two or three years. In animals with experimental nephritis, the majority fail to develop edema. While the output of urine is low, edema does not develop. There is only one form of nephritis, that produced by uranium, in which edema occurs. If an animal with nephritis but without edema be given a vascular poison like arsenic or snake venom, the animal will promptly develop edema, and if these animals are given diuretics, the renal vessels will be dilated as in the normal kidney but no urine passes through; so that the vessels have lost their permeability. So that renal edema is due to loss of vessel permeability, that is those of the kidney, and increased permeability of the peripheral vessels.

DISCUSSION ON THE PAPER OF DR. R. W. WEBSTER

Dr. Jos. L. Miller: Autointoxication has been more or less of a bugbear in medicine. There is especially one phase of it, the autointoxication arising from the gastrointestinal tract, which has always been in the eyes of those who are looking for a specific cause of diseases of obscure origin, like epilepsy, arteriosclerosis, etc. Many believe that the gastrointestinal tract is responsible. It has been only in the past year or two that any definite progress has been made in the detection of any substance in the gastrointestinal tract which can be looked on as having an etiologic bearing.

Some English physiologists have been working on this subject and their results are interesting. They have been able to isolate from putrid meat as well as from the stools of patients fed largely on a meat diet two groups of substances and obtain them in crystalline form. One group has a marked depressor effect. A few days ago I saw some of this substance injected into a dog. It causes a condition in the bronchioles apparently like that which takes place in asthma. There is marked contraction of the bronchioles so that respiration practically ceased. This particular substance was obtained from putrid meat. The other substance resembles in many respects adrenalin. It raises blood-pressure, constricts the renal vessels, causes uterine contractions, etc. It is interesting to note that chemically it resembles adrenalin.

Both these substances are derived from the putrefaction of meat or proteids. It might be interesting to know whether this depressor substance which also constricts the bronchioles might play a rôle in exciting asthma, and whether the other substance which has a marked pressor effect might account for some of the cases of high blood-pressure. They have also been able to isolate the pressor substance from the urine as well as from the stool.

Dr. J. M. Patton: I have seen two cases where a heart which was dilated and arrhythmic regained its normal size and action rapidly after the elimination of the gall-bladder as a cause of the disturbance. It is probable that the effect of the gall-bladder disease on the heart was through disturbance of the cardiac innervation rather than degeneration of the musculature, because otherwise it is hardly conceivable how a heart could so rapidly return to its normal condition.

Dr. Alfred C. Croftan: Dr. Webster's exhaustive and conservative review is of particular interest, less on account of the positive information that it imparts than on account of the problems for further research that it suggests. We know very little in regard to the finer mechanism of intermediary metabolism even under normal conditions, and still less about the perversions of these processes.

We know, generally speaking, that whatever enters the body in the form of "combustible" proteids, fats and carbohydrates, leaves the body in the form of highly oxidized non-combustible end-products, of which urea, carbon dioxid and water are the prototypes. This conversion of suboxidized to completely oxidized products is not, however, a simple one. An intracellular oxidation is carried on by means of a series of fermentative and hydrolytic processes that lead to a splitting of the complex molecules into more simple ones and to recombining of many of the fragments to new compounds before the final union with oxygen occurs. The doctrine of autointoxication of metabolic origin is based upon the conception that in certain disorders affecting the most profound activities of the cell these processes of fermentative splitting, hydrolysis and intracellular oxidation are not carried on as rapidly, or as completely, or in the same direction as under normal conditions, so that abnormal products of metabolism flood the blood-stream and tissue juices and produce a variety of morbid phenomena.

Any effort to incriminate any definite chemical individual as the toxic factor producing particular symptoms has so far failed. Such bodies as urea, ammonia salts, members of the acetone group, amido-acids, etc., etc., have all been accused of producing various typical syndromes. Some of these substances, if administered in large quantities, are unquestionably poisonous and capable of perverting normal function in certain directions; but there is little specificity about their action nor are they capable of producing even in large doses such fulminating syndromes as uremia, diabetic coma, or any of the less clearly defined symptom complexes that we judge to be due to autointoxication.

It is rather a crude idea in my judgment to accuse these bodies of producing the toxemia, for after all they are terminal, highly oxidized bodies and hence presumably inert; for it may be considered a general rule that the more highly oxidized end-products of metabolism are less toxic than those that approach in their constitution the original proteids of the body. Witness on the one hand the essentially non-toxic character of carbon dioxid and water, uric acid and urea, the chief end-products of metabolism, and on the other hand the frightful toxicity of all the members of the toxalbumin, ptomatoxin and ptomaine group.

It is my belief that in the present obscure state of our knowledge in regard to protein chemistry and in view of our inability to identify chemically various degradation products of the proteins that are exquisitely toxic in infinitesimal doses and that still maintain an albuminoid character, this problem will never be solved until more delicate methods are discovered. It is probable that the newer biologic chemistry with the aid of specific precipitins and other biologic manipulations will enable us in the not too distant future to perform such identification. Not until then, however, will we have a scientific basis for the study of autointoxication, nor a clear insight into its etiology, nor satisfactory measures to prevent and to treat its manifestations.

Referring to arrhythmia and palpitation in certain disorders of the liver and its ducts, I am inclined to agree with Dr. Patton. The heart symptoms appear and disappear so suddenly and there are such long periods of perfectly normal heart action between the attacks that irritation of the vagus, locally, seems much more probable than a general chronic toxemia. I have seen a number of cases of gall-bladder disease with marked arrhythmia and palpitation coming on paroxysmally and leading to very distressing functional and later organic cardiac and secondary pulmonary signs that were permanently relieved by correction of the gall-bladder disorder. This observation is being reported more and more frequently. One case in particular I remember with sorrow, because I failed to make a proper diagnosis and treated the patient for myocardial degeneration, when I should have, to judge from the subsequent events in this case, advised a gall-bladder operation. Dr. Robert H. Babcock saw this patient and so advised him and the man promptly recovered and apparently permanently. I must say, however, that I admire almost as much the courage that was necessary to carry out this step in so very sick a man as the splendid result that was secured.

Dr. Cassius Wescott: We see in our routine examination of the eye evidence of arteriosclerosis but we do not know why we have it. Less frequently we see degeneration of the tissue of the retina which sometimes seems to be simply an extension of the process that we have first seen in the vessels, and, of course, it makes us think of some toxic thing, some poison circulating in the vessels which has caused an inflammation and thickening of their walls which has resulted in the ultimate degeneration of the retinal tissues. But there we have to stop. We do not know. In the retina and its vessels, we can see these changes going on better than anywhere else in the body. In addition to hemorrhage in cases of retinitis due to nephritis there is an edema of the retina and some inflammatory exudate and both these conditions may clear up, but more frequently there is a degeneration and atrophy of the retina, especially in the fatal cases.

Regular Meeting, Nov. 29, 1911

The meeting of Nov. 29, 1911, was a joint meeting with the North Shore Branch. The following papers were presented: Dr. Charles M. Robertson read a paper on "The Mastoid Operation and Indications for Same." Dr. Chas. J. Whalen, "Importance of Early Recognition of Pathologic Conditions of Adenoids and Tonsils and Treatment of Same." Dr. John P. Grimes, "Differential Diagnosis Between Pneumonia and Appendicitis in Children."

THE MASTOID OPERATIONS AND INDICATIONS FOR SAME

CHARLES M. ROBERTSON, M.D., CHICAGO

ETIOLOGY

Suppuration of the middle ear is frequent both in the young and old. Perhaps it is more frequent in the young for the following reasons:

1. The same care and attention is not directed to cleansing the nose and nasopharynx in the young as in adult life because the child does not understand the importance of such procedure or the parent is ignorant or negligent in enforcing such care of the upper respiratory tract.

2. Children have a greater tendency to these diseases because of the presence of rhinitis, adenoid vegetations, and enlarged faucial tonsils, which are common causes of tubal infections.

3. Children suffer from the eruptive fevers which have their origin in the naso- or oropharynx and extension of the inflammatory process or sequelæ of the same are more liable to manifest themselves in ear complications.

4. Children are more imprudent in the care of their clothing, careless in keeping their feet dry, sitting in illy ventilated rooms, attending to their bowels, than the grown individual.

5. Teething produces a marked cause for oro- and nasopharyngeal inflammations which are prone to result in ear suppurations.

6. The activity of the lymphatics about the age of puberty may add to cause two.

In the adult suppurative otitis usually occurs in the course of some nose or throat infection more frequently following or accompanying influenza, pneumococcus, streptococcus, staphylococcus or typhoid or colon bacillus infection.

It may follow from an inflammation of any part of the naso- or oropharynx in which the patient is unable to keep the throat clean. Introduction of infection from without is not uncommon although cases from such sources are not frequent. This form of infection is especially liable in cases suffering with parotiditis, the infection following through the open spaces in the external auditory canal in its membranous portion, traveling down the external canal to the middle ear. Injury from without through rupture of the tympanic membrane may result in suppuration of the middle ear. I mention these etiologic causes in the production of suppurative otitis media from the fact that these are the same causes which make the disease known as mastoiditis possible.

MASTOIDITIS

In the opinion of most ear surgeons the mastoid cells are involved in the majority of cases of middle ear suppuration. The only exception to this is where the inflammatory process of the middle ear is limited to the Eustachian tube and the anterior part of the middle ear. It is unreasonable to think that the small cavity which is represented by what is known as the middle ear proper, could pour out such quantities of muco-pus as we encounter in an acute suppuration of this cavity. To define mastoiditis then we would say that it is a disease of the middle ear including the mastoid cells, with or without symptoms of retained pus.

INDICATIONS FOR OPENING THE MASTOID CELLS

The indications for opening the mastoid cells are:

1. One of the methods of opening the mastoid cells is indicated when we have pus in the mastoid cells which will not drain into the external auditory canal through an opening in the drum membrane even when the opening in the membrane is large enough from having done a cutting operation on the membrane, or in other words when the drainage of the middle ear is insufficient to carry off the discharge.
2. In cases where the disease has resisted treatment.
3. Where there is pain over the mastoid, sagging of the superior wall of the external auditory canal.
4. Where the external tissue over the mastoid is red and edematous with or without sub-periosteal pus which may have burrowed into the neck.
5. For sudden cessation of discharge with temperature rise, pain over the tip or antrum cell and side of the neck and face, with or without chills, delirium or convulsions.
6. In cases where the discharge is slight when there is a perforation against the meatal wall, called a dangerous perforation.
7. Where the drum membrane and parts of the ossicles are necrosed or gone.
8. Where there is a thick ropy discharge coming down from the attic.
9. Where necrosis is experienced in the bony wall of the middle ear.
10. Where cholesteatomatous masses occur in the middle ear.
11. Where symptoms of brain complications exist, thrombosis of the lateral sinus, jugular bulb or internal jugular vein are suspected.

THE DETERMINATION OF THE EXTENT OF THE OPERATION

How extensive our operation shall be is determined by certain fixed facts.

1. If the disease be acute with a profuse discharge or where the discharge has been acute, when it occurs in children as a sequel of the eruptive fevers, we may be satisfied in doing what is termed a simple operation.
2. In cases where the drum membrane is intact, the ossicles present, where the perforation does not extend to the tympanic edge and where the other ear is deaf or nearly so it is permissible to do a so-called meato-mastoid operation.
3. In all other cases the operation must be a complete one (called by many a radical).
 1. *The Simple Mastoid Operation.*—In the simple operation the mastoid cells are destroyed as completely as possible, the operation extending as far as the aditus ad antrum. The posterior meatal wall is left intact and the cavity formed is dressed through the posterior wound.
 2. *The Meato-Mastoid Operation.*—In this operation the mastoid cells are made into one cavity, the posterior membranous canal is cut and turned into the newly made cavity to form its roof. The wound behind the ear is closed, the dressings being placed through the opening in the external canal.
 3. *The Complete Operation.*—In the complete operation the mastoid cells, the aditus ad antrum, the tympanum and the external auditory canal are thrown into one cavity. The Eustachian tube is destroyed. The posterior meatal wall is cut away and the membranous canal is cut and reflected into the newly formed cavity in the form of a flap to assist in lining the cavity and assist in healing.

The dressings are placed through the external auditory canal and the wound behind the ear is closed.

With these few remarks I wish to show some plates which will illustrate better than I can describe the points of interest in this operation and before showing them I wish to take this time and opportunity to express my thanks to Dr. Frank Allport for the use of many of the plates.

DISCUSSION ON THE PAPER OF DR. ROBERTSON

Dr. O. J. Stein: The essential feature of this paper is undoubtedly the part referable to the indications for operation. To my mind the term "indication" is rather a relative than an arbitrary one and rests somewhat with the one who sees the case. Many of these cases are seen by general practitioners who are likely to advise on the rules laid down by the essayist and others. That is sometimes misleading.

If the patient is seen by one versed in these conditions, specialists who do this work constantly, their idea as to the indication for operation is entirely different. It is a common thing for men who are doing this work to have patients referred to them for operation and yet it is necessary often times to decline to operate because there is no necessity for it. The disease is cured by the removal of some irritating foci, such as adenoids and tonsils and operations on the accessory sinuses of the nose. There are many conditions of that kind in which the experienced man will recognize that a lesser operation will obviate the symptoms for which a more extensive operation was recommended.

Many of us see indications not mentioned by Dr. Robertson. I have in mind some cases of osteosclerosis of the mastoid where there was intense pain in the mastoid. There is only one condition which we have to consider seriously in the differential diagnosis and that is a neuralgia in a hysterical individual, and that sometimes is a very difficult procedure, one in which it requires courage to determine whether an operation is necessary. Severe pain, existing for a long time, and driving the patient to the use of opiates, may exist as the result of an osteosclerosis of the mastoid. That I look upon as an indication in these cases.

I would like to take exception to the statement that in performing a radical mastoid, where we do not succeed in shutting off the Eustachian tube from the throat, the tube continuing to discharge, that such cases are a failure. I do not think that that is the position taken by many operators. If we took that position, many of our cases would be failures. A large percentage of our adult cases of radical operation continue to secrete mucus from the nasopharynx. That is due to the fact that the tube has not been closed in the reparatory process. That is not an objection always, in fact, it is an advantage. I have known cases where a double mastoid was done at one sitting, and on one side the tube became closed and on the other it did not. The latter at certain times caused a mucous secretion in the ear. These patients nearly always have stated that the hearing was better in that ear than in the other. The operation was just as complete. So that I really do not look on failure to close the tube as an operative failure.

As to the use of Michel's suture. It is a very clever and handy device and hastens the closure of the wound, but it falls short in one particular, and that is, that it does not include in its teeth the periosteum. I look on the periosteum as the essential strengthener to fortify the underlying tissue, and I always pass my needle through the skin and periosteum. I think that is a very important point to recognize. It favors the healing of the wound very materially.

Dr. G. W. Boot: With reference to the greater frequency of suppurative disease of the middle ear in children. There is an anatomic reason for that. The Eustachian tube is wider in children than in adults, and the bony tube is practically absent in young children. This permits of the easier entrance of infection from the nose and throat to the ear.

As to the significance of marginal perforations. I think that these perforations are of significance largely from the fact that they give rise to cholesteatomata. The epidermis lining the external auditory canal has a greater

power of proliferation than has the epithelium lining the tympanum, and when there is a marginal perforation it grows into the tympanum displacing the normal epithelium of the mucosa and forming a cholesteatoma, with all of its dangers.

And this brings us to the question of what constitutes a chronic suppurating otitis media. It is not the time the ear has discharged but the condition within the middle ear. If cholesteatoma is present or if there is carious bone then the condition is essentially a chronic suppurating otitis media regardless of the time the process has continued whether it be six weeks or six years.

Dr. J. C. Beck: The best indication for a mastoid operation, especially the radical one, is the pathology present in the case. It depends on that more than on anything else as to what the course of the disease is. Dr. Robertson did not bring out sufficiently the subject of diseased bony conditions, such as tuberculosis and syphilis or in badly nourished persons suffering from other constitutional diseases. Here the indication is also different as to operation, whether to operate at all.

Another point of view is the social, the clinic or dispensary side of it, the hospital patient, the pauper, the man who cannot afford to take treatment over an extended period of time, the man who must get well quickly. Of course, I am now speaking only of the chronic cases.

In the acute cases, the patient will develop an acute violent otitis media with mastoid involvement. In private practice such a patient may be treated and avoid operation, but let that man go to the dispensary, and his case becomes chronic. I believe that such patients may be operated on with more benefit by bringing about an early restoration of the middle ear and healing by making an opening into the antrum or even by obliterating the entire mastoid process.

Dr. Robertson referred to the lateral sinuses being drawn forward. I cannot conceive of that. The bone is formed, the groove is formed, and no amount of inflammation will draw the sinus forward. We know that there are three types of mastoid, the diploeic, the pneumatic and the semi-pneumatic, but these types are differential in infancy. It is the diploeic type, that forms in chronic disease, the sclerotic or eburnated mastoids, and it is in these small mastoids that the lateral sinus is located forward. I have demonstrated with the Roentgen-ray that the sinus in these cases is close to the posterior margin of the auditory canal, and is always located there in children.

I want to emphasize the statement made by Dr. Stein in regard to the Eustachian tube. At present an insurance company will reject or offer a differential rate for a man with a chronic ear suppuration and advise operation. If you have performed a radical operation, the tube may leak every time the patient blows his nose or gets a rhinitis. The secretions enter the ear. That is not a discredit to the radical mastoid operation, and such patient is considered cured nevertheless.

In the preparation of the patient instead of scrubbing I use iodine. Scrubbing is not in accord with modern surgical principles. Paint iodine over the surface to be operated on. I employ it exclusively. It does not predispose to infection like scrubbing does.

Dr. Robertson (closing): I think we are all agreed in this matter. The meato-mastoid operation in some cases is ideal, but there are cases in which it is not sufficient. There is liable to follow an infection and the patient will have a middle ear suppuration.

Dr. Stein said something about the hearing being better where we had a weeping Eustachian tube. It is true. The better hearing is probably due to the moisture in the ear. Thereby the membrane over the foramen ovale is kept soft. When the tube is completely destroyed the poor hearing is probably due to the drying of this membrane. The membrane becomes tough and the vibration less.

In children the Eustachian tube is shorter, broader and straighter than in the adult. The sclerotic ears, where there is no discharge, with much pain, are at times the most brilliant successes. In some of these cases where there is discharge from the middle ear, we can go further than Dr. Ballenger points out and shut off all of the disease conditions in the naso-pharynx by closing the Eustachian

tube before operating on the mastoid by simply curetting the tube and shutting off the infection so that it cannot get into the middle ear. As to the drawing of the sinus forward, there are many forms of mastoid, neither are the two mastoids in the same person equal. The lateral sinus in children is nearer the external auditory canal because the antrum is high, and it changes as the child grows older, the antrum cell descending and pushing the sinus backward. Some otologists believe that the lateral sinuses can be drawn forward in a sclerotic case by the gradual contraction of bone due to the sclerotic osteitis.

Regular Meeting, Dec. 6, 1911

A regular meeting was held Dec. 6, 1911, with the president, Dr. J. M. Patton in the chair. Dr. Irving H. Eddy read a paper on "A Study of the Mortality of Appendicitis." Drs. Clarence W. Leigh and Louis J. Tint presented a paper on "Do Autogenous Vaccines Aid in Mitigating Distressing Symptoms in Pulmonary Tuberculosis?" Dr. Prentiss McKenzie gave "A Demonstration of the Method of Manufacturing Sera and Vaccines."

DISCUSSION ON THE PAPER OF DR. EDDY

Dr. Chas. Davison: Dr. Eddy has covered the ground so completely that there is little to discuss. Statistics are like a double-edged sword. They can count both ways. Their value depends on the men who make them and those who compile them. The statistics cited indicate that the mortality from appendicitis is not lowering. But we forget that appendicitis is relatively a new disease for which we have operated less than twenty-five years. Many cases, even in the past few years, have not been diagnosed, and the patients have died of something else. The diagnosis is being applied more frequently now to cases that formerly were called something else, and consequently the death rate is higher, although it is being lowered by operation.

It seems to me that the diagnosis is so easy that a mistake should scarcely be made. The cardinal symptoms of acute infectious appendicitis are pathognomonic, ruling out the fibroid appendicitis of Morris and appendiceal colic. There is first the diffuse abdominal pain followed immediately by nausea or vomiting, as the result of the pain. This pain continues for twelve, eighteen or more hours, and then it localizes at McBurney's point. Then there is the temperature elevation. When we have these symptoms in that sequence we know that it is appendicitis, and having made the diagnosis it is useless to do more because we cannot tell what is going on inside. Operation is demanded at once.

The treatment is operation in every case, except in the case of patients who cannot stand an operation because of some dyscrasia or who are sick from some other cause, where it would be fatal to operate, or where a surgeon cannot be obtained. In these cases the Ochsner treatment should be resorted to, but not in any other. The world owes Dr. Ochsner a debt of gratitude, not because of the effect of this treatment on appendicitis, but as a pathfinder, in the working out of the treatment of general suppurative peritonitis. We relieve the tension by draining. Put the patient in the Fowler position, seep out the pus by hot applications on the outside, wash out the toxins from the blood by proctoclysis and keep the patient absolutely quiet and give no food or drink by mouth. Everyone of these being necessary for success.

The simple case of acute infectious appendicitis demands operation. The best treatment in the early stage before the pus gets out of the appendix is excision. It is a simple operation without fatality. Unless there is a surgical accident which cannot be controlled, the patient is well in a short time.

In a case of ascending inflammation or spreading inflammation following the infection getting outside of the appendix, producing a localized peritonitis, operation should be performed, but I believe that many patients have succumbed to the surgeon's trying to do too much. Go in quickly and get out quickly. Do not break down any adhesions because they are protective. If you rub these off or break them down, you open the way for the infection to become more general.

The infection should be drained with as much certainty of cure as in any other case when the surgeon does not do too much.

As to taking out the appendix, that depends on the condition of the patient, the location of the appendix and the adhesions present. If the appendix can be gotten out easily, without tearing the adhesions, which is true nine times out of ten, take it out quickly as a foreign body, but the parts should be drained thoroughly.

In the stage of abscess, where the pus has formed, where adhesions have formed in every direction, where the infection has partially sterilized itself, the pus should be drained as we would an abscess elsewhere in the body. But if these conditions cannot be met in any case the Ochsner treatment is applicable and an appendectomy done as soon as possible afterward.

I do not quite agree with Dr. Eddy as to the location of the incision. When we expect to do a simple appendectomy the incision should be through the side of the right rectus muscle, making a small opening, pulling the appendix up through it and removing it. I apply two purse string sutures of catgut, one going through the intestine entirely, then invaginating the stump, drawing the purse string tight with the object of cutting off the blood supply, and leaving the stump of the appendix draining into the large bowel. Then cover up the stump with another purse string suture which will bury the first row of sutures and prevent seepage. Going through the rectus muscle gives poor drainage, but it is a good place if we wish to prevent the occurrence of hernia.

If there is a probability for draining as in the second form of appendicitis, the ideal incision is at the linea semilunaris. It is the thinnest part of the abdominal wall and is close over the seat of the disease. The fascia pulls apart and remains intact. If we try to go through the large flat muscles of the abdominal wall we destroy a certain amount of muscle tissue by infection and it is replaced by scar tissue which will thin out and hernia may occur subsequently. By going through the linea semilunaris, if hernia does occur, a herniotomy can easily be done and a firm abdominal wall is left.

In the abscess variety, I wall off the infected area with iodoform gauze, and drain by gauze only, not tube drainage. I let the gauze stay in place until it is pushed loose by the granulating tissue, at least a week; then take it out slowly, an inch at a time, so that the cavity can fill up without any pocket forming behind the gauze.

In the condition where there is an old walled off abscess, drain in a different way. Go right down through to the abscess, no matter where it is, because it is walled off, and you can do that work without infecting the abdominal cavity at all, if you are careful not to make pressure. You must tease your way through after striking the peritoneum because the cecum may be anterior to the pus and you may perforate it or some other portion of the intestine.

Dr. A. J. Ochsner: The paper is a credit to its author. I agree with everything he said in regard to the diagnosis. Ordinarily there is no difficulty in making a diagnosis if you make a physical examination. When one sees these cases in consultation, one frequently finds that the disease has existed for two or three days, and the doctor who sees the patient on the first day thought it was simply a case of indigestion, for which he gave him something. If he had made a physical examination then he would probably have made a correct diagnosis. By giving a cathartic or a little opium or morphin for the discomfort, he put off the diagnosis for twenty-four hours. Then an examination is made and the case correctly diagnosed, but, possibly, considerable mischief has been done in the meantime. Nearly always a cathartic has been given, and that moves the intestines about and carries the bacteria from the original site of infection, and that makes the condition much worse.

I have held for twenty years that so long as the infection is still in the appendix it should be removed at once because that disposes of the whole proposition, provided a competent surgeon is available. I believe that we can now all agree upon this point which I have always insisted. The reason for the mortality in appendicitis primarily is the failure to make a physical examination. The next

reason for mortality in appendicitis comes from operating in cases in which the infection has already extended beyond the appendix; cases operated upon between the third and seventh day after the beginning of a severe acute attack. The third reason for the mortality comes from causing intestinal peristalsis by giving a cathartic or food by mouth. The fourth cause, which is not so common, comes from severe manipulations. The degree of manipulation required to make a diagnosis of appendicitis is very slight. I have seen very serious conditions occur from severe manipulations.

I have had this experience. A case of acute appendicitis occurred during the delivery of a child. I saw the patient on the fifth day when there was a severe peritonitis. It was too late for an early operation and too early for a late operation. I advised gastric lavage, nothing to be given by mouth in the way of cathartics, food or drink; rectal feeding containing twenty drops of deodorized tincture of opium was given every three hours. The next morning pulse and temperature were below 100. Two days later the temperature was 99 F. and the pulse 80. The patient continued in a normal condition two days; on the night of the third day the temperature rose after a severe chill. Later she had another chill. On inquiry I learned that she had been examined thoroughly by four physicians, then she had the chill and the rise in temperature. Three days later she had another violent physical examination made during a consultation with the same result. They finally left her alone and six months afterward we took out the appendix. The appendix had been gangrenous and during each of these examinations a little pus had been squeezed out of the appendix, and the chill, the rise of temperature and pulse were directly due to the spreading of the infection caused by these manipulations.

In these cases I place a large moist hot dressing containing one part of alcohol and two parts of saturated solution of boric acid on the abdomen. It is comfortable and no one is likely to touch the patient because it is too much trouble to take off the dressing.

Never operate after a beginning peritonitis until that condition is over.

When you cannot operate, wash out the stomach, give nothing by mouth until the acute attack is over, and then you can operate in safety. Dr. Deaver says that his mortality in this class of cases, since he has adopted this method, has been reduced to one-fourth of what it was before. Dr. Mayo says the same thing. You will get less than 2 per cent. of mortality in gangrenous and perforative cases if this method is employed.

You have the best possible condition for elimination of the infected organ and the prevention of general peritonitis if you give Nature a chance. In front and to the outer side and behind the infected appendix is the abdominal wall and below the pelvic cavity, which is accustomed to infectious material. There is the omentum which will surround the diseased appendix. This leaves only the inner side bounded by the small intestines which is the dangerous zone. The leukocytes rush to the rescue by devouring the bacteria and making an auto-vaccine. The omentum and peritoneum dispose of bacteria in infinite numbers, providing you keep the infection in that little circumscribed corner. The worst you will have is a circumscribed abscess which you drain easily and safely.

Dr. Eddy makes this mistake. He looks upon this infection on the third or fourth day as he looks upon an abscess. The diphtheria simile is wrong. The similarity is the same as in snake-bite. If you can shut off the circulation in snake-bite and stop the venom from circulating, by immediately constricting the extremity between the body and the location of the bite, you are safe, but let it spread and no matter what you do, the patient will die. In the same way all you have to do with the appendix is to hold still and give Nature a chance to build a cofferdam around the infection. So far I have not seen a single patient die from any form of appendicitis in which neither food nor cathartics were given after the beginning of the attack. That has been the experience of all men who have followed this method.

There is nothing more certain than what an appendicitis case will do if you give absolutely nothing by mouth, wash out the stomach so that nothing can pass

into the intestines to cause peristalsis and put on a big dressing to prevent diagnostic abdominal massage, give exclusive rectal feeding, with proctoclysis according to Murphy's method. That patient will get well, unless he has been given cathartics and food before you begin the treatment. So that there is a certainty of what appendicitis cases will do if treated as they should be. Even in cases in which cathartics or food have been given before they are placed under this form of treatment the mortality is very small.

The incision is really a matter of personal choice. Men of equal ability have a different choice of incision. When we operate on a gangrenous appendix with pus, we go through the rectus muscle and then drain through a small McBurney incision so that we can sew up the primary wound. That is the method Deaver follows, while others follow the method Dr. Davison described. But that is really a personal matter.

The after treatment which Dr. Eddy described is good. We invariably employ the Fowler position in suppurative cases and fill up the blood vessels by Murphy's proctoclysis. When these patients are nauseated we wash out the stomach, no matter whether there is emesis or not. That is as important after operation as before. Every patient who has nausea or vomiting or gaseous distention due to any intra-abdominal disease except a perforation of a viscus, should have his stomach washed out, no matter whether these conditions be due to gall-stones, peritonitis or whatever other condition may cause these symptoms.

Dr. I. H. Eddy, closing the discussion: If we could have harmony in the profession in this matter we would have fewer cases of appendicitis of the suppurative type. While we are arguing as to whether or not to operate, the patient is dying. In these infections, especially the streptococic, the time will come when the infection will overcome the patient's resistance. If we can drain that infection away, we will carry the patient safely over the line, therefore, I always advocate an immediate operation. It seems to me that in so severe an infection as appendicitis, it is like having a bomb with a long fuse for which we are waiting to explode the bomb.

A few years ago I investigated the records here from the time of the first operation in the city until about three years ago. There was a large percentage of peritonitis, but as the appendicitis came up, the peritonitis came down.

DISCUSSION OF THE PAPER OF DRS. LEIGH AND TINT

Dr. Clarence Wheaton: My results with stock vaccines have been very definite but they are not to be compared with what the autogenous vaccines can do. It is gratifying to see what has been done with these vaccines in tuberculosis. It is not claimed that they are a cure for the disease, but something which will in some measure at least relieve the patient of his distressing symptoms. I realize the value of such a paper. It is worthy the consideration of every one, whether specialist or general practitioner.

Regular Meeting, Dec. 13, 1911

The meeting of the Chicago Medical Society was held Dec. 13, 1911, with the president, Dr. Joseph M. Patton, in the chair. Dr. G. Frank Lydston read a paper on "Sterilization in Social Therapeutics." Dr. S. A. Matthews read a paper on "A Study of the Effects of Eek-Fistula on Dogs."

DISCUSSION ON THE PAPER OF DR. LYDSTON

Dr. H. N. Moyer: This paper sounds well, and the simplicity of the proposed sterilization would seem to make it about all that is needed to eliminate the defective and criminal classes. The method of enforcement is not explained to us in detail. The author lays stress on the regulation of matrimony, meaning by that, I presume, legal marriage—but will that stop procreation? Has not the experience of modern society shown that the restriction and hindrances to legal marriages only increased illegitimacy?

We have no studies on heredity in relation to degenerate types that are of value. Those relating to insanity that encumber reports of insane asylums are

worthless. There are only two types of defectives that have been studied in that connection, in which the reports are worthy of serious consideration. One is the study made in New Jersey at the Institute for the Feeble-Minded, and the other is that made in the same state at the village for epileptics. Dr. Goddard told me that 65 per cent. of the feeble-minded in custody in New Jersey are the result of heredity. One very interesting family includes the descendants, over 300 in number, of a man who lived in New Jersey about 1770. There are 165 feeble-minded in that family. That shows what the effect of direct heredity is.

Of epileptics about 65 per cent. are also directly traced to heredity, fairly according to the Mendelian law. The statistics show that nearly 30 per cent. of the epileptics in custody in New Jersey are the result of poorhouse associations of feeble-minded and epileptics, and that they were of extramarital procreation. How is the regulation of matrimony to reach that class? Criminals do not much care whether they are married or not; therefore the regulation of matrimony will not reach that class.

This question of sterilization appeals to one, and it should be given full consideration. It is only two days ago that a feeble-minded child was brought to me by its father, a minister of the gospel. The child was a fair grade feeble-minded girl. The father took up the question of education with me, referring to the physical dangers of a girl who could not be morally educated. I referred to sterilization and he said it ought to be considered. If he comes back and wants the little girl sterilized, I will not do it because I am not a surgeon, nor will I advise a surgeon to do it. With our laws as they are now who is to consent to this operation?

Dr. L. H. Mettler: This is one of the most important questions to-day before the body politic. It is a fact, recognized by all, that the Church cannot control criminality or suppress wrong doing in the community. We are beginning to feel that legal measures, legislative enactment, and court procedures do not suffice. As a last resort the medical profession is appealed to for assistance in handling the problem. Naturally, knowing what we do of physiology, we at once think of the prophylaxis and the prevention of crime by the method which Dr. Lydston was one of the earliest to propose and of which we have heard more to-night.

It is a fascinating proposal if for no other reason than because it involves two or three large biologic questions. Dr. Moyer has already referred to one, the relative importance of heredity and environment in the production of character. I am in hearty accord with Dr. Lydston in believing that hereditary conditions or direct patho-physiologic states that are transmitted should be prevented in some way by sterilization. But when you come to the question of criminality there is another matter that must needs be considered, namely, the definition of crime. These defective people are not all criminals. They do things, certainly, that look like crimes in the light of the law, but they are not criminals in the true sense because they are diseased individuals. Disease is not crime; and men in delirium are not guilty of criminal acts. Of course, any procedure that helps to check procreation among these defectives is absolutely desirable, but when we talk about criminality along these lines, we are opening up a very debatable field. In the first place, is the spirit of crime inherited? Are psychic qualities inherited? Types of constitution are inherited; but there is on the other hand a very great possibility that crime in large part is due to the defects of organized society, whereby inequalities and injustices are most to blame. Whether crime is not the result in large measure of a false education of a mentally weak or susceptible individual under bad conditions is a most important matter for consideration. At all events it must be taken into consideration in studying the prevention of crime along these lines even.

Again, another problem arises. If we are going to mutilate thus real criminals, those who are anti-social possibly from mere defect of environment, the question of expediency intrudes itself. It is known that eunuchs are worse than criminals in many instances. There develops a craftiness, a devilishness and cunning among them by reason of the knowledge of their unlikeness to other men.

They are transformed into types of criminals, which they were not before they were made eunuchs.

The point I am endeavoring to make is that these criminals, real criminals who have been rendered antisocial by errors of society and of educational methods and not so-called criminals who are defective by reason of disease and other congenital factors, may in all likelihood be made more criminal, more vindictive, and more antagonistic generally to society by sterilizing them in the manner proposed. Suppose a mistake is made and a man, who biologically is all that could be desired, psychically has been rendered antisocial or criminal, his education and environment having tended towards the development of antisocial ideas, may not such a man, if restored to society after a period of confinement, do far worse things than procreate his kind? I am thinking of the crime of rape. Knowing that he is sterilized without the loss of sexual appetite, may not such a man be made into a dangerous rapist first because of his vindictive feeling towards society, and secondly because he (and perhaps sometimes even his guileless victim) is wholly unchecked by the fear of begetting a living evidence of their crime? I suggest this as something also deserving of careful consideration in the discussion of the prevention of crime by means of sterilization.

The whole matter, it seems to me, turns upon the relative importance of heredity and environment in the production of criminality. Most of the thinkers to-day believe that environment plays a much more important rôle than has been supposed, especially in the development of psychical traits, and that heredity, so far as the production of anti-social psychic condition is concerned, is of less importance.

Dr. W. T. Belfield: To this clear and forceful exposition of the subject, nothing of importance can be added, nor anything of moment subtracted. Dr. Lydston's position is rather in advance of the profession's views in general. Yet I believe that he is right in all he has said.

Our attitude toward feeble-mindedness in its broadest sense, by which I mean idiocy, imbecility, epilepsy and much of criminality, is essentially the attitude which our fathers maintained a generation ago toward scarlet fever and diphtheria. Those are diseases whose transmission can be restricted in large measure by the police power of the state; yet thirty years ago any subject of scarlet fever was at liberty to transmit his disease to others without the slightest check by the authorities. The state did, however, recognize one duty in the premises, namely to see that the remains were decently interred. To-day the feeble-minded are at liberty to beget children, some of whom will inherit this defect, without any check on the part of the state. The state recognizes one duty in the premises, namely, to see that the remains are interred in asylums, prisons and poor-houses. (Police!!!!)

The next generation will treat these transmissible defects quite as we treat transmissible diseases at present. The state will endeavor to prevent the procreation of defectives; and one of the ways to do this is undoubtedly sterilization. There seems to have crept in the failure to recognize the difference between sterilization and asexualization. That is unfortunate. One of the states that attempted to adopt the Indiana law failed because those who drafted the law did not recognize this difference. Vasectomy sterilizes but does not asexualize.

Dr. Edward H. Ochsner: In the discussion of a subject of this magnitude, necessarily many points must be left out, but one point should never be lost sight of, namely: that as the philanthropic activities become more and more pronounced in any civilized community, the necessity of sterilizing defectives becomes more and more imperative as a matter of preserving the best types of the race. I know of two families, either one of which will illustrate this point perfectly. In one of these families the woman was not particularly bright, the man was clearly a defective, little better in development than what is known as the moron type. This couple had thirteen children in fifteen years. The woman from overwork, over-childbearing and exposure contracted pneumonia and died. The children, ranging in age up to 14, were in the course of a couple of weeks deserted by the father, who inside of six months again married, and who probably since

then has been procreating his kind. The children were taken over by the county board and were distributed among the comfortable families of the community. The last I heard they were all living. Each one of these children is below normal and some are distinctly defective, as low as the ten year type. Fifty or one hundred years ago few of these children would have reached maturity. To-day, because of our care of these poor defective children they are alive and stand a good chance of reproducing their kind. We were compelled, then, as a matter of race protection to devise some means to prevent their reproduction, because as things are now the defective has really more of a chance to reproduce his kind than the normal. To begin with they are as a rule more productive and better care is often taken of them. The state or charitable organizations look after them and see to it that they are well fed and well housed while the average individual has to provide for himself. Because of this relative disadvantage a pair of ordinary normal individuals is distinctly handicapped and is less likely to bring to maturity as large a number of children than a defective couple. This fact is, I believe, a serious check to race improvement and calls for prompt, decisive, remedial action.

Dr. Gordon G. Burdick: It seems to me that the profession had better turn its attention to learning the cause of these defectives rather than to devise methods to exterminate them after they are here. How much of a rôle alcohol plays in the production of heredity has not been touched on, but I have had many talks with superintendents of state institutions and all say that alcohol is a factor. Bad feeding, toxemia and bad habits of living all contribute toward these things, and if we are to do our duty, we must find out the cause of the existence of these defectives. There is no question that much of this evil can be done away with. Many inmates of asylums could be saved.

We are now trying to deal with the end products. If we do our duty we will not have so many defectives. The state institutions merely feed and clothe the patients and no attention is paid to their physical condition. In my opinion, the state had better curtail or destroy the liquor traffic, rather than to encourage and share in its evil profits, before it asks the medical profession to devise ways and means to protect its people from the horrid showing it has brought about. I am afraid, however, that it will be some time before much is done as human life is of small consequence compared to profit in these days.

Dr. Lydston (closing the discussion): Dr. Moyer differed with me and then agreed with everything I said by referring to the large percentage of cases of epilepsy which could be ascribed to heredity.

Is this method practical? Yes. It is working very well in Indiana, and some of us are doing it in our private practice. The public is being educated just a little in this direction and every once in a while we are appealed to by individuals who want to marry but realize that having children is not wise or just to their prospective progeny, and they come and ask to be sterilized.

There will be more and more legislation along the lines of regulation of matrimony. Take, for example, the race problem. Some years ago one of my articles in which I called attention to some of the dangers of this problem and made some suggestions as to remedies, excited a great deal of ridicule. The state of Louisiana was compelled in self-defense to legislate against miscegenation, and for the purpose of the law any individual having one-thirty-second of black blood is construed as being a negro.

Dr. Moyer laid considerable stress on the legal side of this question. I was not talking about the sterilization of children to prevent procreation, but only one of the conditions of matrimony to be imposed on certain adult defectives and degenerates.

Dr. Mettler spoke of the relative importance of environment and heredity. I never could see much use in theorizing about the relative importance of these things in discussing what to do with the criminal, and what to do to protect society from the criminal. The criminal is not a theory; he is a condition. The question is what to do with him to prevent him from procreating his kind. I think that the arguments of some psychologists are rather illogical. However we

may theorize, the criminal is a defective. He is a weakling. I do not care whether he is so primarily or because of the life he leads after he has been sent to the penitentiary. And I think that Dr. Mettler will admit that the weakling might transmit certain defects to his progeny. For that reason alone we are faced with whether we shall allow the criminal to go on procreating his kind or prevent him from doing so to the best of our ability. If we could immure all these defectives permanently, it would be a different proposition, but we cannot do so. They go out of prison and go on propagating their defective kind.

That the criminal is not punctilious in the matter of his sexual relations is true, but the operation would prevent him from having illegitimate as well as legitimate children. The eunuch is an entirely different proposition. There is a vast difference between the individual whose psychology has once been impressed by the testicular or ovarian reflex and the individual who has been castrated late in life. There is a vast difference between the eunuch of the harem of the East and the criminal who is made a eunuch by our social system. The same is true of the Amazon as contrasted with the woman whose ovaries are removed in adult life. It does not convert her into an Amazon in the sense of the Amazons of Dahomey. The internal secretion of the testicle is an important consideration. The operation of sterilization does not interfere with that secretion or with the sex psychology of the individual.

I was glad to hear Dr. Belfield's mention of the car barn bandits. So far as I know the only analysis of those men based on accredited data was published by me. I was Van Dine's family physician and knew him well for many years when I was in general practice. He had epileptoid convulsions when a boy. His father, as was stated, absconded. There were no less than three cases of insanity in Harvey's family. His sister was, or is now, in an asylum for the epileptic and feeble-minded.

Marx's brother and sister were insane, and, I think, the latter committed suicide. His father died in the Joliet penitentiary, where he was sent for criminal assault.

Niedermeyer's mother was arrested a number of times for disorderly demonstrations due to insanity. Mrs. Van Dine, who has devoted her life to slum work, took Mrs. Niedermeyer and kept her until her death. Mrs. Niedermeyer's brother died of general paresis.

This series of cases alone is enough to impress the point, to say nothing of the fact that these boys were arrested for a minor offense three or four years before the car barn murder and were immured for a time. They came out completed criminals and no effort was made to supervise their subsequent career.

Dr. Burdick did not seem to like the idea of sterilization, yet he says that the state is responsible for these defectives. That is true. It allowed them to be born. The state is also responsible for allowing them to procreate their kind. When every state assumes its share of responsibility for defectives, sterilization and marriage control will be generally adopted.

DISCUSSION ON THE PAPER OF DR. S. A. MATTHEWS

Dr. A. J. Ochsner: This is an intensely interesting and valuable contribution which will serve as a basis of much surgical work in the future. In our work we come in contact with two conditions, the obstruction of the common bile duct due to gall-stones or tumors, and the obstruction of the portal circulation by cirrhosis. The technical or surgical part of this work is not nearly as difficult as the scientific part which Dr. Matthews has worked out. When we learned that we could operate on the common bile duct if we drained it well, the whole subject became clear to us, and from that time on we have been able to overcome obstruction of that duct with comparatively little danger to the patient. That is why the work Dr. Matthews has done is of such importance to surgeons. He says that we must not undertake to prevent the portal circulation passing through the liver unless we establish a perfectly free passage for the blood of the portal vein, either by means of the vena cava or more imperfectly in the manner in which it has been done by the Talma operation by securing adhesions.

One point has impressed me which I think we should make use of surgically; namely, this: Dr. Matthews has shown us that the healthy kidney is able to take care of the additional ammonia that passes through into the circulation without having been treated by the liver without any apparent harm to the animal. Of course, it would require a long period of observation to determine whether this condition may not have the same effect on the kidneys that diabetes has in the elimination of sugar ultimately on the kidneys. These conditions would have to be determined by long observations. His experiments on meat feeding also will prove very valuable. He has shown that if we supply the collateral circulation the difficulty which might otherwise result from meat feeding is eliminated.

This paper has given me a great deal of food for thought, and I am sure that it will be the basis of much progress in surgery.

Dr. Lespinasse: So far as the technic of Eck fistula in animals is concerned it is quite simple. It has been done on the human being once successfully by a French surgeon and the patient lived four months in apparent good health. It was a case of cirrhosis of the liver and the ascites did not recur. The patient died of liver failure.

I have tried the operation once, on the human. A modification of the Eck fistula, an anastomosis between the inferior mesenteric and the spermatic veins, has been tried once or twice but with failure. In my case it seemed very easy on the cadaver and I tried it four times. Unfortunately the cadavers were tall and thin and the patient was short and fat, and in trying to expose the vessels, he took the anesthesia badly. His abdominal walls never relaxed and I never saw the veins I wanted to anastomose. But from the technical side the operation should be an easy one if the patient is a favorable one. Since then I have noticed that most patients with cirrhosis of the liver are short and fat.

Dr. S. A. Matthews, closing: In reply to Dr. Ochsner's question will say: the kidneys and liver were examined in most of our dogs. In one animal, which lived for fourteen months and was subjected to meat-poisoning eight times, the kidneys were normal while the liver showed marked fatty changes. This dog was in good health when killed.

Professor H. G. Wells has examined the liver and kidneys of a number of the dogs and has reported both fatty and necrotic changes in liver and kidneys.

CHICAGO OPHTHALMOLOGICAL SOCIETY

Regular Meeting, Oct. 16, 1911

A regular meeting was held Oct. 16, 1911, with the president, Dr. H. W. Woodruff, in the chair.

BLOOD-STAINING OF THE CORNEA

Dr. W. A. Fisher presented a boy, aged 18, who was struck in the eye by a piece of iron or steel six months ago. He was treated for five weeks and advised to have the eye removed. When Dr. Fisher saw him there was little evidence of inflammation or irritation, but the cornea was of a dark-brown color, with a narrow zone of normal cornea at the outer edge. There was some discoloration in the iris and at the lower sclerocorneal junction, which looked as though it might have been caused by the entrance of iron or steel. The tonometer registered 625. Otherwise the eye was normal, as was the fellow eye. The giant magnet proved negative. The Roentgen was negative. The band of normal cornea increased in width slowly until the edge of the pupil was visible. It is found to be two millimeters wide. It is impossible to say whether the lens is injured or not. Undoubtedly the trouble will clear up in time.

DISCUSSION

Dr. O. Tydings said that this was the first case of the kind he ever saw, and believed that these cases are very rare. In six months there has been a remarkable clearing up in the cornea.

As to the pathology, the rupture of Descemet's membrane without rupture of the cornea and the staining even after the cornea was ruptured he could readily understand, because there might be closure of the external layers of the wound in the cornea, a condition which would be met with if Descemet's membrane alone had been ruptured.

Dr. Harry S. Gradle saw this patient two months ago and the condition has improved remarkably since then. It was difficult to say just what it was. There was a clear zone of cornea on the edge. It may have been hemorrhagic organic exudate from the anterior chamber. Why the blood in the cornea should assume this color when much the same condition exists in other cases with unruptured Descemet's membrane, such as a green discoloration in multiple sclerosis—why there should be a different color here than there is difficult to say. In an unbroken Descemet's membrane it seems that the blood assumes a different tint, probably because it is a different reduction process, whereas in the ruptured Descemet's membrane the color is said to be dark brown. No explanation has as yet been given of this phenomenon.

Dr. Oscar Dodd presented a case before this Society a number of years ago. An intense staining was present. He also presented another case where it was a question whether the staining was due to a foreign body or to blood. It was the general opinion of the Society that it was due to the former. A foreign body was still in the eyeball. It had been in the sclera several months before it was removed. The cornea was stained very much, as in this case, and the doctor thought it was due to the metal and not to the blood.

Dr. G. F. Suker saw this patient several months ago and the color was at least four shades darker than it is now. Therefore, it is quite probable that the cornea will clear up considerably more. Of greatest interest is the question as to how it got there. It is undoubtedly blood. Dr. Suker doubted that it is necessary to have a rupture of Descemet's membrane to have the blood there. It is undoubtedly an infiltrate. It may have gotten there in the same way that edematous conditions in a glaucomatous eye are caused. It must have gotten through the pectinate ligament. This is the only condition in which there is a passing of the aqueous humor into the cornea. This ligament starts in the posterior layers of the cornea and is a continuation of it. Therefore, it must have been injured and have had an opening large enough to permit of this infiltration. In order to have an exudate of this shape, multiple ruptures of Descemet's membrane must occur, and it is doubtful if such a rupture took place. Descemet's membrane, when ruptured, and with this degree of infiltration, will not heal up with a uniform surface. Therefore, again, it could only have gotten there by way of the pectinate ligament. About two months ago Dr. Suker saw a boy whose entire iris was torn from the temporal side seven-eighths of the distance, one-eighth on the nasal side being intact. There was a little rupture of the cornea on the temporal side, and there was infiltration of blood into the cornea; inside of a week, however, it had disappeared.

Dr. Fisher, in closing, said that the singular thing about this case was its rarity, and yet with such an injury one naturally would expect to see more cases. Of course, in Dr. Dodd's case there was staining from the metal. There are many such cases in the literature.

AMBLYOPIA WITH HIGH REFRACTIVE ERROR IMPROVED WITH ALTERNATING CURRENT

Dr. W. Franklin Coleman reported the case of a girl aged 10 years with amblyopia associated with high refractive error, which improved markedly under treatment by the alternating current. The current (sinusoidal) was applied to the eyes and nape of the neck for fifteen minutes daily for three months. Vision was improved from 20/100 to 15/20. Glasses had been worn three years. Patient had accepted O.D.: 1.75+4.50, cyl. 90°. O.S.: 1.00+3.50, cyl. 90°. No improvement by glasses. No evidences of hysteria.

DISCUSSION

Dr. G. F. Suker said that in small children, in whom high refractive errors usually appear, we should bear in mind that sight is not ocular, but mental, and that it depends on the images formed in the retina, to a certain extent, whether they are complemental. If low mentality is present, low retinal perception will prevail, to a certain extent. The cerebral center of visual interpretation can be stimulated by such means as Dr. Coleman has used. Therefore, if the retina be stimulated indirectly, the brain is stimulated and the images are clear, because the patient sees better. These patients with high refractive errors, as a rule, lack mental power to maintain the accommodation necessary to overcome the refractive error. Any correction that will give a clear retinal focus or picture of the object looked at will give a better interpretation. By doing that, the fusion power is also improved. The visual acuity is increased and stereoscopic vision is stimulated. As soon as stereoscopic vision is increased, binocular vision is increased, and consequently perceptive power, and, in turn, visual acuity. It is also largely a matter of education with these children. Dr. Suker agreed that there are secondary contractions. That being taken away will give another point in clearing up the faulty images formed. High degrees of refractive error, particularly astigmatic, will give oblique images. We all know that in early presbyopes there is a certain amount of astigmatism.

Dr. Faith inquired if the refractive condition of the patient's eyes had been frequently tested?

Dr. Coleman replied that he had examined her repeatedly, but did not prescribe glasses at all.

Dr. O. Tydings observed that the patient was a mouth-breather. Wherever varying degrees of refractive conditions are noted, getting one result to-day and another to-morrow, the visual acuity is very low. The first thing to eliminate in these cases is a sero-sinusitis. This child's lids are hyperemic and the chances are that the globes are congested. Where any improvement of vision with an alternating current is developed, or any other form of current secures results, it would be dependent entirely on the condition of the sinus. Dr. Tydings suggested that this feature of the case be inquired into.

Dr. Coleman, closing discussion, stated that he did not examine into this because the child has been improving without correcting other conditions. He thought that we are too apt in cases of high refractive error to let the patient alone. This patient was prescribed +6 D., and it was a good prescription, but she could not see one line better than 20/200, and no better with +6 cylinder than she could without.

SECONDARY DIVERGENT STRABISMUS

Dr. H. W. Woodruff's patient was operated on about twenty years ago for convergent strabismus. Evidently a very extensive tenotomy of the internal rectus was made, because there were fifty degrees of divergence, with exophthalmos, sinking of the caruncle, and paralysis of the internal rectus, so that adduction was impossible. The eye could be rotated to the median plane from a position of abduction, but could not be adducted beyond this plane. After subconjunctival anesthesia a vertical incision was made through the conjunctiva over the whole tendon insertion. The conjunctiva was dissected backward as far as the caruncle, disclosing a retracted capsule. The muscle fibers could not be distinguished. By incising the capsule and reuniting the cut ends after bringing them closer together, function of the muscle was restored.

VERTICAL STRABISMUS

Dr. Woodruff: The left eye in this case was turned outward and upward about fifteen degrees in each direction. R.V.: 6/10— —50+1.75 ax. 50; L.V.: 6/30 —2.00+2.75 ax. 160.

The horizontal deviation was corrected by a tucking of the internal rectus. A partial tenotomy was done of the inferior rectus at the external border, but gave no appreciable result. Later a tucking was done of the inferior rectus, with

complete tenotomy of the superior rectus. This gave the desired cosmetic result, demonstrating that the inferior rectus lends itself to tucking as readily as either of the horizontal methods.

RETINITIS PROLIFERANS

Dr. Woodruff: The patient presented himself with a history of loss of vision in the right eye occurring suddenly a week before. There was a positive history of lues. Vision: Counting fingers at eight inches in the right eye, 20/200 in the left. Ophthalmoscopic examination of the right eye showed a neuro-retinitis with some hemorrhages. Patient complained of severe headaches. He was treated with mercurial inunctions and potassium iodid. Vision slowly improved up to ability to count fingers at five feet; in two months there has been no change in vision. There is now also a hyperplastic formation over the disc to the nasal side, which is gradually increasing in size.

DISCUSSION

Dr. Thomas Faith thought that the results in the strabismus cases were good. There is little bunching after seven weeks; not more than would be present after any kind of operation.

Dr. Oscar Dodd considered the results good, especially in the case of convergent strabismus. He operated on a case where there was a 30° vertical deviation, which was congenital; almost a complete tenotomy was done. Not getting the lateral fibers of the superior rectus, an advancement on the inferior followed, bringing them down so that they were nearly parallel, but it came back and there is still marked deviation. The inferior rectus was advanced as much as was possible at the time.

In regard to cases after a complete tenotomy, where there is no movement, Dr. Dodd believed that when the muscle is entirely cut off, as this apparently was, and all lateral connections are severed, the fascia which comes up is attached to the wall of the orbit and apparently pulls the muscle away from the eyeball, and there is no deviation. In these cases there is no connection between the severed muscle and the eyeball, so that if one can find it in the action of the muscle there will be a pulling backward of the caruncle and no action on the eyeball. The ability to get a result in these cases depends on whether there has been a large amount of traumatism done at the time of operation, so that the muscle is bound down by a mass of cicatricial tissue. If it is, it is practically impossible to separate it and bring it forward and attach it to the eyeball and get any movement. In some of these cases the speaker had been fortunate enough to separate the muscle, bring it forward and, although the action was weak, the result was fairly good. It is a much more difficult operation than the ordinary advancement.

Dr. Richard J. Tivnen said that the bunching following a tendon tucking disappears surprisingly early.

With reference to the difficulty of getting the muscle when it is so far back following a tenotomy for a convergent strabismus, the speaker recalled two patients who were sisters on whom tenotomies had been done by another physician. In one case Dr. Tivnen did the operation Dr. Dodd spoke of, with fairly good result. In the other case he failed to get any result.

Dr. George F. Suker suggested that Dr. Woodruff practically made a new muscle. The muscle attachment to the capsule is disregarded, but the tendon is simply cut horizontally and a new muscle is made. That is a step not described anywhere heretofore. It is a new method of restoration of a muscle.

As to the thickening in these tucking operations, that disappears very rapidly and will do so more rapidly providing, when the operation is completed, the site of the wound is thoroughly covered with conjunctiva, so that no opening is left. That has been the speaker's experience with the operation, which he has been doing for a number of years. There has been considerable thickening, but when the conjunctiva was coapted thoroughly there was not so much thickening, and what there was disappeared rapidly.

Dr. D. C. Oreutt recently operated on a patient by this procedure. For some time he has been experimenting with a stitch to keep the muscle from slipping away. He inserts a mattress suture at the sclerocorneal margin and brings it back through the muscle, at the same time fortifying it with a Worth suture. Silk is used. He had obtained perfect results, having made an advancement of 30° in one case.

Dr. Clark Hawley complimented Dr. Woodruff on his tucking operation. Dr. Woodruff performed it for him in his clinic, with a result that was simply perfect. The eye operated on was practically a blind eye, but the cosmetic effect was as good as in his own case.

Dr. O. Tydings believed that, as a scientific body, we should insist on exactness in terms. He did not know of anyone who had succeeded in making a new muscle. These muscles are not attached to rubber bands, so that when cut they can be picked up, brought back and advanced. While it may not be possible to recognize the muscle fibers in the tissues, they are there just the same, and when the tissues are drawn forward the cut ends of the muscle are practically united. Dr. Tydings had a case where the cosmetic effect was perfect, so far as the eye was concerned.

As to the case of retinitis proliferans, if a patient has had syphilis at some time during life, everything he may have afterward is attributed to the syphilis, and it does lay the foundation for many conditions. A most frequent cause of hemorrhage, especially in the retina, is tuberculosis. In syphilis there occurs an obliterative endarteritis, and while this man may have had syphilis, the question of tuberculosis should be eliminated.

Dr. Woodruff (closing): Worth says, in his book on "Squint," that the tendon lies over against the orbit somewhere. The point I wanted to bring out especially is that you can find the muscle; therefore, I simply dissect the conjunctiva back as far as the caruncle and under it, and then take hold of the edge underneath the conjunctiva, which was Tenon's capsule, and probably contains muscle fibers, and make a couple of horizontal slits in it, fashioning a tongue-shaped flap. This is not a new muscle, but simply bringing together the muscle fibers which are not visible. Otherwise the muscle would not have the power of contraction. I have always gone on the theory that you can tenotomize an external rectus muscle with less regard to ultimate results than you can the internal rectus, but there is a limit even to that. There is some danger of over-correction if the operation is combined with an advancement or a tucking. There is a slight convergence in my case. I started out on the theory that it was impossible to get an over-effect. I did all I could to get an over-effect. I have had few cases of secondary divergence to operate on. I have seen them, but have not been willing to operate, but now I shall not hesitate to do so, because I feel that I can promise the patient a satisfactory result.

FÜRSTENAU'S ROENTGENSTEREOMETRY

Dr. Max Reichmann: The method is based on certain geometrical calculations which show that the vertical distance of an object examined from the fluorescent screen or the sensitive plate depends entirely on the distance of the two shadows which are obtained when two bundles of Roentgen rays reach the object at the same time, and from the same distance, provided the distance of the tube from the plate is constant, as the distance between the two anti-cathodes also must not vary, the same being always 6.5 centimeters.

FOREIGN BODY IN THE EYE

Dr. Thomas Faith exhibited a patient in whom all that could be seen at first observation was a corneal wound, a small healed wound in the iris, and a slightly opaque lens. Dr. Reichmann located the foreign body with the magnet over the center of the cornea, when a piece of metal immediately bobbed up. It was just behind the iris, where Dr. Reichmann had located it. Dr. Faith extracted it, but in doing so pulled the iris loose.

DISCUSSION

Dr. Fisher congratulated Dr. Faith on the result obtained in this case. If the incision had been made below instead of above, the iris would have been pulled out just the same.

We are, of course, always glad to have the assistance of a Roentgen expert in this work, but Dr. Fisher wants him to tell him the location of the foreign body without having to look at the plate himself. The speaker has found that the patient may lose his eye. If the operator in making the plate will watch the good eye, he can tell whether the eye is moving or not. If the patient moves the eye, the piece of steel is apt to be missed.

Dr. Coleman: It is very important to localize a foreign body in the eye. Unless Dr. Fisher has changed his views, he operates first, and then gets a skiagraph after the operation to see whether he has removed the foreign body. I prefer to have the picture first, so that I can tell just where to put my magnet. I like to get as close to the foreign body as possible because the traction of the magnet is inversely to the square of the distance. I do not want to draw the foreign body clear across the eye. Dr. Faith in his case followed Haab's rule of withdrawing the foreign body through the front. I have devised three or four different tips which I can attach to the large tip, and, if necessary, insert through the scleral wound. I cannot see the advantage of drawing this through the front at the great risk of wounding the iris and the lens, particularly if the foreign body has not caused a cataract in entering. If the body has entered at the posterior sclerocorneal margin, Cobb reverses the polarity of the magnet and shoves the foreign body back, but I think that was a pure coincidence. If you will take a small irregular particle of iron or steel, approach it with a hand magnet, and reverse it rapidly, either end will attract equally well.

Dr. Fisher: I do not take out a piece of steel through the sclera and I do not go behind the iris. I always pull the steel out through the pupil when the lens is injured. I do not have a skiagraph made when the lens is injured, because I want to remove the steel as soon as possible. If the lens is injured, it is just as well to take the steel out through the pupil, as any place; in fact, a little better, and the skiagraph would not help you at all.

Dr. H. W. Woodruff: Haab, in a paper read before the American Medical Association in 1902, laid stress on placing the tip of the magnet over the center of the cornea, and have the piece of steel pass between the lens and the ciliary body, drawing it through the pupil into the anterior chamber. In a recent article he expresses regret that his remarks were not adopted by American ophthalmologists, and that the trend of opinion in this country seems to be that the foreign body should be extracted through an incision in the sclera. If a foreign body has but recently entered the eye through the cornea and passed into the vitreous, withdraw it through that opening. Stopping to make a skiagram does delay the operation. In a recent case I saw the patient half an hour after the injury, and shortly afterward I succeeded in extracting the piece of steel through the point of entrance. The interesting point in the case was that the lens did not become opaque. The patient has 20/20 vision. There is still the line in the lens through which the foreign body passed, but the remainder of the lens is clear.

Dr. Max Reichmann: You can extract a piece of steel with a magnet without an x-ray picture if the steel is in the eye, but if it is in the orbit you cannot extract it. To determine the location of the foreign body you must have a skiagraph. Formerly, I took two pictures to localize a foreign body. Now I take only one. The Sweet method is a good one, but very complicated. The stereoscopic method is excellent. It shows the location of the foreign body exactly, but it is difficult to make these stereoscopic plates. Another method is to make two pictures at right angles to each other. The objection to this method is that the patient does not keep his eye perfectly quiet. Fürstenau's method is simple and exact. I cannot watch the good eye to see whether it is moving or not because I am not anywhere near the eye while the tube is in action. I remain in a lead-lined cabinet.

Dr. Faith expressed surprise at what Dr. Coleman said about drawing the foreign body into the anterior chamber. He has seen it occur many times in rabbits' as well as in patients' eyes. He did not think it difficult to do this. Perhaps in this case, if he had extracted the foreign body by means of a probe, he might not have drawn out the iris. Dr. Faith has had cases in which the result was better than in this one, but Dr. Reichmann certainly helped him to find the foreign body in this eye. He followed Haab's instruction of placing the tip of the magnet in the center of the cornea, but this is the first time that he had a foreign body entangled under the iris, which would not loosen. It looked more like a nail than a small piece of metal, a millimeter or two in diameter.

WILLIS O. NANCE, Secretary.

CRAWFORD COUNTY

The regular November meeting of the Crawford County Medical Society was held November 9, in the Carnegie Library, Robinson. The meeting was called to order by the president at 2 p. m. and the minutes of the previous meeting were read and approved. The following members were present: Drs. Allen, Firebaugh, Wilson, T. N. Rafferty, Newlin, Kasdorf, Davis, Henry, Lowe and Carlisle. A paper, "Diseases of the Tonsils; Their Effect upon Children," was read by Dr. Davis, which was a very interesting and well written paper. Upon motion, seconded and carried, the paper was received by the society for discussion which was participated in by the entire society. This was followed by a "Round Table Talk; Proper Fumigation after Contagious Diseases," which was led by Dr. T. N. Rafferty and was discussed generally by the various members.

A resolution was passed by the society asking the City Council to appoint a local physician to superintend the fumigation after all cases of contagious diseases.

Adjourned.

A. LYMAN LOWE, Secretary.

The Crawford County Medical Society met in regular session January 12, in the Carnegie Library, at 2 p. m. The president being absent the meeting was called to order by the vice-president, Dr. G. C. Kasdorf, after which the minutes of the previous meeting were read and approved. The following members were present: Drs. Davis, Midgett, Carlisle, H. N. Rafferty, Newlin, Dunham, Price, Kasdorf, Lowe, Firebaugh, Allen and Meserve. Dr. E. B. Cooley of Danville, Ill., was a visitor.

Dr. Cooley, councilor for this district, made a talk relative to the various resolutions regarding amendments to the State constitution. Also relative to the various county societies which he has recently visited, reporting that the societies were in good condition. A paper, "Diphtheria," was read by Dr. Price. Upon motion duly carried the paper was received by the society for discussion, which discussion was led by Dr. Cooley followed by the entire society. It was moved, seconded and carried that the delegate to the next meeting of the state society be instructed to vote against the resolutions of Dr. Zurawski and Dr. Coleman and in favor of the resolution of Dr. Black, relative to the amendments of the State constitution.

Adjourned.

A. LYMAN LOWE, Secretary.

EFFINGHAM COUNTY

The Effingham County Medical Society met in regular session December 12, at the city hall with Vice-President Dr. E. W. Brooks presiding in absence of President Dr. J. H. Walker. The first part of the program was the annual election of officers. The election resulted as follows: president, E. W. Brooks, of Beecher City; first vice-president, Dr. H. Taphorn, Effingham; second vice-president, Dr. P. I. Cromwell, Effingham; secretary, Dr. C. C. Holman, Effingham; delegate to the State Society, Dr. C. F. Burkhardt; alternate, Dr. F. Buckmaster; member of the medico-legal committee, Dr. J. H. Walker; board of censors, Drs. Bing, Taphorn, Buckmaster, Cromwell and Kirshner.

A committee consisting of Drs. Buckmaster, Burkhardt, and Taphorn, was appointed on public press; the duty of this committee is to interview the publishers of the papers in the county, in an effort to induce the latter to discontinue their advertisements of quacks, patent nostrums, travelling specialists and other such fakers. This committee is to report at the January meeting.

Dr. Burkhardt then read a paper on "Mastoiditis"; the symptoms and diagnosis were especially gone into, the relationship of this dangerous disease to middle ear and throat inflammations, being brought out most carefully. The doctor brought out carefully also the fact that continuous middle ear discharge meant mastoid involvement, that this continuous discharge must come from mastoid suppuration, stating that when the pus was escaping freely through a rent in the drum membrane, mastoid symptoms as such were usually absent to a great extent, because of the free drainage, but when drainage was not free, typical and violent "mastoid" symptoms resulted, which made the diagnosis plain to all. He advocated early operative treatment on indications for this very dangerous infection.

C. C. HOLMAN, Secretary.

GALLATIN COUNTY

The Gallatin County Medical Society met in regular session in the office of the First National Bank at Ridgway, Ill., Jan. 10, 1912, with Dr. W. H. Riley, president pro tem. in the chair. Owing to the severe cold weather, the attendance was small, however, quite an interest was manifest. The following papers were read and discussed at length by all present:

"Some Facts Concerning Some Forms of Venereal Diseases," by Dr. Alonzo B. Capel, Shawneetown, Ill. "Lagrippe," by Dr. W. H. Riley, Ridgway, Ill. "Diagnosis and Complications," by Dr. J. A. Womack, Equality, Ill.

The following officers were elected for the ensuing year: President, Dr. E. A. Greene, Ridgway; vice-president, Dr. J. H. Gregory, Ridgway; secretary-treasurer, Dr. Alonzo B. Capel, Shawneetown, Ill.

A committee consisting of Drs. Paul Sherman, Alonzo B. Capel and J. W. Bowling, all of Shawneetown, was appointed to revise the constitution and by-laws of the society, the same to be reported at the next meeting of the society.

The next meeting of the society will be held in Equality, Ill., April 10, 1912.

ALONZO B. CAPEL, Secretary.

HENDERSON COUNTY

A called meeting of the Henderson County Medical Society was held at Stronghurst, Ill., Jan. 17, 1912. The meeting was called to order by Dr. I. F. Harter at 7:30 p. m. Members present were Drs. I. F. Harter, H. L. Marshall, E. E. Bond, W. J. Emerson and J. P. Riggs.

Minutes of the last meeting were read and approved. Petition of Dr. A. F. Stewart of Briggsville was received and he was duly elected. In the case of Dr. A. E. Lanver, who has not been affiliated with the society since reorganization, it was moved by Dr. Emerson that the society remit the unpaid dues, and receive Dr. Lanver to membership by his paying dues from Nov. 1, 1911.

Dr. Emerson made a motion that the secretary make a list of non-paying members to be furnished by each member of the society, and when compiled, to furnish each member with a completed list. It was also recommended that members of this society charge for telephone advice or consultation same as office advice or consultation. Motion made by Dr. Marshall that the amendments to the State Society By-Laws as recommended by Dr. Black be approved. Motion carried.

JACKSON COUNTY

The December meeting of the Jackson County Medical Society was held in the parlors of the Jackson Club at Murphysboro Dec. 21, 1911, at 1 p. m. Present: Drs. Agnew, of Makanda; Tweedy, of Vergennes; Sabine, House, Riseling.

Carter, Horstman, Ormsby, Melz, Wayman, Essick, of Murphysboro; W. R. Gardner, of Grand Tower, and Hugo Ehrenfest, of St. Louis. The following physicians were accepted as members: Drs. C. D. Gardner and W. R. Gardner, Grand Tower; Dr. H. M. Daniel and Dr. I. W. Ellis, Murphysboro, and Dr. Hiller of Vergennes. The society moved to take up the A. M. A. post-graduate course and to hold future meetings monthly. Dr. Hugo Ehrenfest read a very able paper entitled, "Recent Tendencies in the Treatment and Etiology of Eclampsia." The following new officers were elected for 1912: President, Dr. R. S. Sabine, Murphysboro; vice-president, Dr. O. House, Murphysboro; secretary-treasurer, Dr. C. O. Molz, Murphysboro; delegate, Dr. F. M. Agnew, Makanda; alternate, Dr. A. R. Carter.
RAY B. ESSICK, Secretary.

JO DAVIESS COUNTY.

The Jo Daviess County Medical Society met in the parlors of Warren Hotel, Warren, Ill., Jan. 4, 1912, at 1 p. m., with the following members present: Drs. Nadig, Godfrey, Kaa, Stafford, I. C. Smith, Keller, Kreider, D. G. Smith, Bucknam, Hillard, Miller, Walker, Lewis, Fleege, Brownson of Dubuque and Clark of Freeport.

The amendments to the State Constitution were taken up and the society voted instructions for their delegate to carry out at the coming state meeting. The president appointed Drs. Nadig and I. C. Smith to examine the secretary and treasurer's books. The report of this committee was "That they found the books correct with a balance in the treasury of \$36.59."

A pleasing feature of this meeting was that although the temperature was 20 or more degrees below zero there were sixteen doctors present and among this number were the two oldest members on our roll, namely, Dr. Godfrey, of Omaha, Neb., formerly of Galena, who still holds this society as his medical home, and Dr. Bucknam of Warren. These two war horses entered into the spirit of the meeting and showed the young men a fine example, both by their presence and interest.

Dr. Clark of Freeport was then introduced and read a paper on "Some Medical Sins of Omission." Sorry that not every member could hear this paper as it contained some very valuable points. Dr. Kaa then read a paper on "Pleurisy" that brought out a very good discussion.

It was moved and carried that a fee of \$10 be charged for using or vaccinating a patient with the typhoid vaccine.

In view of the advancing prices of every commodity a committee of three, namely Drs. Stafford, Smith and Miller, was appointed to revise our present fee bill and present it at our next meeting for adoption.

The election for the ensuing year resulted in the following: President, W. H. Miller; vice-president, S. H. Hillard; secretary and treasurer, D. G. Smith; delegate to state meeting, D. G. Smith; alternate, S. G. Kreider; censors, Drs. Stafford, Nadig and Fleege.

The society then adjourned to the dining rooms where the Warren division entertained them with an elegant dinner.

D. G. SMITH, Reporter.

Secretary Smith sent out notices for the annual meeting embellished by the following literary gem:

Ye Fable of Ye Two Doctors

Two disciples of Æsculapius graduated in the same class and hung out their shingles in the same town.

One believed in the Code of Ethics, while the Other had faith in advertising.

One attended church and taught Sunday school, the Other joined Lodges and was a political power in his Ward.

The One treated the poor and often forgot to send a bill.

The Other hired a collector and bought real estate.

Blessed was the name of the One among the poor and lowly, while the name of the Other often appeared in the newspapers.

Years passed.

One died old and poor and his widow took in boarders. The Other left a Fortune and his widow sported purple and fine linen on a trip to Europe.

One lies in a neglected grave. A statue of the Other stands in the market place. Query: Does it pay?

LAKE COUNTY

A meeting of the Lake County Medical Society was held Jan. 16, 1912, at 8:30 p. m., at the Public Library, Waukegan. In the absence of the president and vice-president the meeting was called to order by the secretary and Dr. L. B. Jolley of North Chicago was elected chairman.

The secretary's report was read and approved. The following applications were then considered for membership: Dr. W. Warriner, Antioch; Dr. C. G. Stegmayer, Waukegan; Dr. Leonard Szumkowski and Dr. Alfred E. Budde, both of North Chicago. The board of censors reported favorably on each of these applications and they were elected unanimously as members of the society. It was then voted that the membership dues for the year 1912 should be \$2.50. It was also voted to have the chair appoint a committee of two to assist the secretary in getting out the *Lake County Doctor* for the year. The chair appointed Drs. W. C. Bouton and J. C. Foley. Dr. L. H. Tombaugh handed out a few bouquets to the *Lake County Doctor*, which was appreciated especially by the secretary. The paper of the evening was given by Dr. M. L. Harris of Chicago on the subject of "Open Method of Treating Fractures." The paper was one of the most scientific read before the Lake County Society. Numerous skiagrams were shown to illustrate the paper and this with the experience of the doctor at Alexian Brothers' Hospital held everyone in close attention to every remark made. Following Dr. Harris' paper the matter of the resolution of the American Medical Association was taken up for consideration. Dr. Harris was asked to explain what was meant by these resolutions, after which the society voted unanimously to have the secretary report favorably on the affiliation plan with the American Medical Association. A vote of thanks was extended Dr. Harris for his most excellent paper with the unanimous expression of the society that it had been one of the most instructive papers read before our society. Those present were: Our guest, Dr. M. L. Harris, Drs. L. B. Jolley, F. C. Knight, J. C. Foley, C. E. Daniels, W. S. Bellows, L. H. Tombaugh, F. Ludwig, C. G. Stegmayer, L. Szumkowski, A. E. Budde, H. Holm, A. O. Wright and W. H. Watterson. The meeting adjourned.

W. H. WATTERSON, Secretary.

MADISON COUNTY

The Madison County Medical Society met in Edwardsville, Jan. 5, 1912, with President E. C. Ferguson in the chair. It was a highly successful meeting and well attended in spite of the bad condition of the weather. Those present were Drs. Cook, Hastings, Wedig, Smith, Oliver, Sims, Burroughs, Barnsback, Tulley, Sutter, Hirsch, Harrison, Ferguson, Wahl, Kerchner, Robinson, Zoller and E. W. Fiegenbaum. Dr. Tulley moved that a committee be appointed to arrange a social meeting and banquet to be held in Alton next May and the chair appointed Drs. Smith, Cook and Pfeifferberger. The secretary was instructed to enlarge "The Madison County Doctor" to an eight-page paper if such action was deemed advisable.

Dr. Carl E. Black of Jacksonville, who was to deliver the leading lecture at the meeting, received word at the last minute which prevented him from coming. However, he sent Dr. Geo. H. Stacey, who read his paper on "Displacements of the Colon." This paper was a highly scientific one, and was very well read. It gave some very interesting facts, and related several experiences of Dr. Black.

Dr. Eugene Wahl, of Edwardsville, presented a very interesting specimen of ovarian cyst. This specimen was viewed with interest by the members of the profession present.

The session was a busy one and a number of resolutions were passed. Probably the most important one and one which will be of most interest to the people of Madison county, was introduced by Dr. F. E. Tulley of Granite City. It is as follows:

"WHEREAS, It has come to our knowledge that the City of St. Louis has made all arrangements to haul the garbage of said city through several cities in the western portion of our county and to dump the same at Stallings in our county; be it therefore

"Resolved, That we the members of the Madison County Medical Society hereby express our extreme condemnation of any such proposition, as being not only a common nuisance but also detrimental to the health of the people, and be it further

"Resolved, That we call upon our State Board of Health to take such measures as will effectually prevent the consummation of the proposed action."

Another interesting resolution passed was introduced by Dr. E. A. Cook of Alton. It was a resolution of thanks to the Commercial Club, for the use of their room for meeting purposes. It was as follows:

"WHEREAS, The Edwardsville Commercial Club has permitted us the free use of its rooms for the purpose of holding the several meetings of the Madison County Medical Society, during the past year, therefore be it

"Resolved, That we hereby express our appreciation of this act of courtesy and extend the thanks of the profession of the county to said club, and be it further

"Resolved, That the secretary be requested to send a copy of these resolutions to the secretary of the Edwardsville Commercial Club, and also to embody them in our minutes."

Another resolution introduced by Dr. Lay G. Burroughs of Collinsville, and passed by the society, is self explanatory:

"WHEREAS, The press of this county has extended many courtesies to the Madison County Medical Society, in publishing notices of meetings, reviews of work done, etc., be it therefore

"Resolved, That we as a society appreciate the kindness shown and extend our thanks for this evidence of interest in our profession; and be it further

"Resolved, That our secretary be instructed to furnish a copy of these resolutions to the several newspapers of the county."

E. W. FIEGENBAUM, Secretary.

M'LEAN COUNTY

The society reports that the meeting of the McLean County Society held Dec. 7, 1911, was a veritable feast, socially, physically and intellectually. Forty doctors did justice to an elegant banquet such as can be served only by the Woman's Exchange of our city. Dr. Wm. E. Quine of Chicago was the guest of honor. After dinner we adjourned to the Unitarian church where Dr. Quine addressed the society on "The Religion for a Doctor." As the doctor used no manuscript we have but meagre notes and can only touch on such points as impressed us. The columns of the BULLETIN are open to those who may have been differently impressed, and if we can be favored with comments from several who heard him it may become quite interesting.

The doctor reviewed the various religions of the world, together with the different forms of worship, and concluded with the declaration "I do not know and you do not know but such prayers in the ears of the same Supreme Being are of the same consequence as ours." In selecting a religion to live by we can not select one because of its divine authority, for they all claim that, there seems but one test that we can select by, and that is the influence on the social conditions in this world, and with such a test no religion can stand comparison with the

Christian religion for a minute. Religion is the effort of the finite mind to comprehend the Infinite. There are some things that the finite mind can not comprehend, e. g., the limits of time and space. We can not even think of what will occur in a million years or what will follow that. The finite mind has its limitations; there are certain concepts beyond the human mind. What is your conception of what Christianity is? Is your conception the same as Christ's, or that of his Apostles? Is it the same as Abraham's? It is no such thing; your ideas are as different from his as night is from day. What are the foundations of Christianity? According to Paul the foundation is belief, not character. Jesus does not even mention Belief. According to Paul, we must believe in the immaculate conception, resurrection, ascension and divinity of Christ and atonement. Belief is not an act of volition, we can't believe because we want to. Belief is the result of conviction which comes from without and is constant. Opinion is based on evidence and may change.

Paul's idea of religion would condemn one-half the world because of our inability to believe what he teaches to be essential to salvation, while Christ's teaching is broad enough to include the whole world, as it is based on doing the will of God. I prefer to follow the lonely Nazarene as exemplified in his life among men. Give to the poor, not only to Christ's poor, but perhaps even more to the devil's poor, as they seem to need it more.

The Doctor believes Paul to be the author of division, sects and creeds among the people by insisting on certain beliefs. He deplores the ignorance of the masses in the teachings of Christ and he insists that insurgency is in the air and that ere long the simple teachings of Christ will be taught the masses by paid teachers who are competent to teach, and that the time is past when men will agree to believe certain dogmas to get into the churches.

The address was well received and it is surely comforting to the busy doctor who has little time for so-called religious work, as taught by the churches to-day, but much time for true charity with no hope of reward in this world.

The regular meeting of the McLean County Medical Society was held in Council Chambers, Bloomington, Jan. 4, 1912, President R. A. Noble presiding. The minutes of the October, November and December meetings were read and approved. On motion the dues for 1912, local and state, were fixed at \$3.50 per member. The board of censors reported favorably on the applications of E. R. Herrmann, of Stanford; Geo. H. Small, of LeRoy; Wm. T. Williamson, of Lexington, and Chas. H. Zorger, of Bloomington, Ill. On motion the report of the board of censors was accepted and membership granted to the above named gentlemen. In report of cases Dr. Noble exhibited an appendix of enormous proportions. Dr. H. L. Brown read a very interesting paper on "Cause and Prevention of Puerperal Fever." The weather was so inclement the attendance was small.

THOMAS D. CANTRELL, Secretary.

MASON COUNTY.

The regular quarterly meeting of the Mason County Medical Society was held Jan. 8, 1912, at Mason City. The meeting was called to order by President Burnham, and the following program was rendered: Dr. J. W. Hairgrove of Jacksonville read a paper on "Surgical Diagnosis." This was a very instructive paper pointing out some of the difficulties encountered by the general practitioner in deciding whether a case was one for operation. Dr. H. O. Rogier of Mason City read an excellent paper on "Influenza and Its Treatment." Every member present took part in the discussion, particularly on the treatment of influenza. Dr. Walter M. Caton of Mason City presented a surgical case for diagnosis.

The following officers were elected for the ensuing year: President, Dr. E. W. Paul, Forest City; vice-president, Dr. F. M. Coppel, Havana; secretary and treasurer, Dr. F. F. Garrison, Havana; Dr. C. C. Buchanan of Mason City was elected to membership.

The next meeting will be held in Easton, Ill., April 1, 1912.

MORGAN COUNTY

The Morgan County Medical Society held its annual meeting December 14, for the election of officers for the ensuing year, with the following members present: President Woltman, Norris, Bowe, J. U. Day, Ogram, Campbell, Baker, Hairgrove, Treadway, Reid, Adams, Munch, Stacy, Crouch, Hardesty, Cole and Gregory. Drs. Nickel and Foley were present and presented applications for membership. The application of Dr. Myers was again presented and applicant elected to membership. Reports of various officers and committee chairmen showed that the society has had a successful year. The treasury reports \$106.77 cash on hand.

The society held ten meetings during the year with a total attendance of 182. There are to date sixty members in good standing; fourteen eligible and ten non-eligible in the county.

Five applications for membership have been received during the year; two were accepted, one rejected, and two laid over for the next meeting.

The librarian's report shows 1917 books in the library, twenty-seven of which were added this year. Twenty-eight medical journals are received. A system of circulating the journals on Tuesday and Saturday of each week at which time those on hand will be taken up and brought back to the library will be a great benefit to each individual physician. They will be bound in a separate cover so that they will be convenient to handle and distinguish from other journals. This method ought to greatly increase the use of journals and keep every member up-to-date on all current literature.

The following officers were elected for the ensuing year: president, Edward Bowe; vice-president, George H. Stacy; secretary, Walter L. Treadway; treasurer, A. L. Adams; librarian, Carl E. Black; censor for three years, Chas. E. Cole; delegate for two years, Chas. E. Cole; alternate, David W. Reid.

A motion was made to continue having a stenographer take papers in full at meetings and abstracts of such papers to be kept on file, with all previous minute books belonging to the society, in the library.

Adjourned.

A. R. GREGORY, JR.

The Morgan County Medical Society met at the Medical Library, Jacksonville, Ill., Thursday, Jan. 11, 1912, at 8 p. m., with President Dr. Bowe in the chair. The applications of Drs. Edward A. Foley and F. W. Nickel were reported on by the board of censors and approved by them, both doctors being unanimously elected to membership. Drs. Foley and Nickel were duly notified. In view of the fact that the milk supply of Jacksonville has heretofore been questionable as to purity, the president, Dr. Bowe, sees fit to appoint a committee to investigate the Jacksonville Creamery Company. Drs. David Read, Josephine Milligan and T. O. Hardesty were appointed to serve on this committee.

The future meeting of Feb. 8, 1912, was announced, at which meeting Drs. C. E. Cole, G. A. Stacey and F. A. Norris will consider the subject of "Kidney Affections," each man to consider the clinical, pathologic and surgical conditions in the order so named.

Dr. Edward A. Foley then presented the paper of the evening on the subject, "Eugenics, a Plea for a Better Race." Dr. Foley presented this subject before the society, considering it from many viewpoints.

Dr. Frank P. Norbury led the discussion of the paper and spoke at length upon the environmental influence on character formation. He also spoke of the work of Burbank in the study of plants and animals.

Dr. E. L. Crouch spoke on the subject, "The Education of the Youth in the Public Schools," and also commented upon environment in the formation of character.

Dr. Leonard spoke of the recent work in the prevention of defectives and how they were at present being taken care of.

The attorneys of the City of Jacksonville and the clergy were invited to attend this meeting. Mr. F. L. Gregory and Mr. J. Marshall Miller were the two attorneys present.

Mr. Gregory discussed the subject and was inclined to favor the sterilization of defectives.

Mr. Miller, also, favored such a procedure.

Rev. J. G. Kuppler was the only member of the clergy who accepted the invitation. He discussed the subject of Eugenics from a moral standpoint.

The Jacksonville State Hospital Medical Society presented an invitation to the Morgan County Medical Society to meet with them on the first Wednesday in February, when Dr. H. Douglas Singer of the State Psychopathic Institute would read a paper before the Jacksonville State Hospital Medical Society.

Dr. Norbury, of the State Board of Administration, announced and gave a verbal invitation to all members of the Morgan County Medical Society to attend Dr. Singer's lectures during the first two weeks of February, at the Jacksonville State Hospital.

In view of the fact that the society had adjourned on account of limitation of time, the program for the year was not considered.

The members present were: Drs. E. F. Leonard, E. L. Crouch, C. E. Cole, A. R. Gregory, C. E. Baxter, Edward Bowe, J. E. Elder, H. C. Walker, F. P. Norbury, C. E. Black, G. R. Bradley, W. Treadway.

The visitors present were: Rev. J. G. Kuppler, Attorneys J. Marshall Miller and F. L. Gregory and Garin Norbury.

VERMILION COUNTY

The Vermilion County Medical Society was called to order in the City council chamber, Danville, Ill., at 8:30 p. m., by President L. B. Russell.

The minutes of the December, 1911, meeting were read and approved after correcting by noting the fact that upon motion the delegate was instructed to vote against the Dr. K. A. Zurawski (of Chicago), amendment at the state meeting in May. Drs. Wm. F. Gerety, Geo. T. Cass, Harly J. Gunderson, E. Gordon and C. Williams were elected to membership.

The application of J. H. Lagrange of Danville, Ill., was read.

In taking up the unfinished business, the communications received from Dr. C. E. Black of Jacksonville, Ill., were read and a copy of the letter sent to Winnebago Co. from Dr. J. W. Pettit. After the reading of these letters which set forth the purpose of the proposed amendments to the state constitution and by-laws, the delegate upon motion was instructed to vote for the amendments proposed by Dr. C. E. Black. The delegate was not instructed relative to the amendment proposed by Dr. Coleman.

The following resolution was then adopted:

WHEREAS, Medical Science is agreed that the use of tobacco by boys during the process of their development seriously impairs the nervous and circulatory systems, therefore, be it

Resolved, That we, the Vermilion County Medical Society, hereby place ourselves on record as strongly advising against the use of cigarettes or of tobacco in any of its forms by immature boys.

Dr. R. S. McCaughey, of Hoopston, Ill., then gave a lecture on "Some New Things in the Diagnosis of Stomach and Intestinal Diseases." The points of most importance were illustrated by charts. Our men consider Dr. McCaughey second to none in the state, when it comes to knowing things about the stomach and intestines.

A vote of thanks was extended to Dr. McCaughey.

Members present, thirty. Adjourned

SOLOMON JONES, Secretary.

WILLIAMSON COUNTY.

The society meeting was held in the city of Marion, Dec. 26, 1911, Dr. L. B. Casey presiding. The following officers were elected: President, Dr. J. W. Vick, Cartersville; vice-president, Dr. L. B. Casey, Marion; second vice-president, Dr.

A. M. Edwards, Marion; secretary-treasurer, Dr. J. G. Parmley, Marion; board of censors, Dr. G. E. Galbraith, Clifford; Dr. G. W. Gore, Johnston City; Dr. D. D. Hartwell, Marion. The time of meeting was taken up with discussing the matter of a County Hospital, and the following suggestions were offered:

1. A County Hospital with modern equipment would be just as much or a greater public benefactor, than the County Jail or the County Court House.

2. In Williamson County where there is much mining and railroading we have many accidents which require immediate surgical attention, and the most of these cases are taken away to some hospital at a great sacrifice of time and much suffering on the part of the patient, to say nothing of the hospital fees and the doctor's bills which are paid to the hospitals and doctors outside of our county.

3. A hospital maintained and operated as a County Institution would be a paying proposition in this county, either directly or indirectly, or both directly and indirectly.

4. No homes, even the most modern, are suitable places for the sick to be cared for. All lingering cases of sickness, such as typhoid, under trained nurses and close medical attention, can be treated in a hospital at much less expense than in any home; and the chances for recovery in a hospital are much better than in the home.

5. Williamson County itself would support a good-sized hospital, and we would have a large-sized territory to draw from in adjoining counties and south of here.

6. Instead of sending our surgical cases off to the city for treatment let others send their patients to Marion for such treatment. There are certainly enough public-spirited men in this county who would take an interest in this hospital proposition if it were presented to them properly. Every doctor should talk "hospital" until others begin to talk the same; then it won't be long until there will be some action taken, and the first thing you know it will be a sure thing.

WINNEBAGO COUNTY

Following the annual complimentary banquet at the Nelson House at which there were forty-eight physicians in attendance, the Winnebago County Medical Society met in annual session Tuesday, Jan. 9, 1912, at 8 p. m., at Nelson House Ordinary, Rockford, with President William H. Fitch in the chair. On calling the roll the following physicians were present: Drs. Ackerman, Allaben, Atchison, Barth, Bourland, Clark, Cochran, Crawford, Culhane, Cunningham, Day, Dunn, Fitch, Franklin, Fringer, Goembel, Hanford, Hatch, Helm, Howard, Horrell, Jenks, Keith, Kinder, Kinley, Lichty, Lofgren, Markley, P. L. Miller, Moyer, Moore, Nyman, Park, Pattison, Paul, Ranseen, Ransom, Rogers, H. R. and N. C. Scott, Shultz, Starkey, Tibbitts, Tuite, Vanderhoof, Walker, Weld, E. H. Winn, G. L. Wright.

The censors reported favorably upon the application of Milton R. Barker, M.D., graduate of Chicago Homeopathic, 1891; Northwestern University Medical School, 1901, licensed 1893. Upon motion and seconded Dr. Barker was elected to membership to this society.

The proposed amendment to the Illinois State Medical Society Constitution by Carl E. Black, M.D., May, 1911, was discussed, and the society voted to endorse Dr. Black's amendment. The remaining amendments were left to the judgment of the delegate of 1912.

Drs. Franklin, Pattison and Vanderhoof were appointed as a committee to draw up resolutions of sympathy for Dr. and Mrs. C. W. McDowell, in the loss of their only son, and present same.

WHEREAS, In the providence of God, our brother physician, G. W. McDowell and his wife have been bereft of their beloved son, be it

Resolved, That the Winnebago County Medical Society do hereby express to them, their profound and sincere sympathy in this hour of bereavement; and be it further

Resolved, That these resolutions be forwarded to Dr. and Mrs. McDowell, and that a copy be spread upon the records of the society.

Under the next order of business the secretary-treasurer's report was read. Winnebago County Medical Society for the year ending Dec. 31, 1911. Organized at Rockford Oct. 18, 1881. Chartered Jan. 26, 1893. Number of meetings held annually, nine; name and subjects of same:

Jan. 10, 1911, P. L. Markley, M.D., Rockford. "Practical Points in Surgical Diagnosis." Annual election of officers.

Feb. 14, 1911, Drs. H. M. Starkey, W. Grant Hatch, Don A. Vanderhoof, Rockford. "The Common Diseases of the Eye, that Every Physician Should Recognize and Know How to Treat."

March 14, 1911, T. H. Culhane, M.D., Rockford; "Dysmenorrhea."

April 11, 1911, William A. Pusey, M.D., Chicago, "Diseases of the Skin," illustrated with lantern slides.

May 9, 1911, Miss Jane P. Hubbell, librarian, Rockford, "Establishing and Maintaining a Medical Reference Library in the Rockford Public Library."

Sept. 12, 1911. Frank H. Jenks, M.D., Rockford, "Report of a Case of Double Consciousness."

Oct. 10, 1911. William E. Quine, M.D., Chicago, "The Religion for a Doctor."

Nov. 14, 1911, Russell Broughton, M.D., Rockford. "Alcohol Habits."

Dec. 12, 1911. E. C. Dudley, M.D., Chicago, "Gynecological Surgery," illustrated by lantern slides.

Average attendance, thirty-two. Date of annual election of officers, Jan. 10, 1911: President, William H. Fitch, Rockford; vice-president, Allen C. Eakin, Rockford; delegate to Illinois State Medical Society, May, 1911, Chas. E. Crawford, M.D.; alternate, W. S. Howell, M.D., Winnebago, Ill.; censor for three years, W. E. Park, M.D., Rockford; censors, Drs. W. S. Howell, D. B. Penniman, W. E. Park.

Members gained, fourteen; by application, thirteen: Drs. Ethan P. Allen, Robert W. Markley, Guy J. Hall, H. W. Ackerman, C. M. Ranseen, W. L. Ransom, Ernest E. Ochsner, Homer F. Moore, Emil A. Ochsner, H. R. Rogers, Louis A. Shultz, John R. Porter, Milton R. Barker.

By transfer, one; Dr. Frank H. Jenks, from Fox River Valley Association, Illinois.

Loss by death, two; Ethan P. Allen, M.D., April 6, 1911. Albert H. Green, M.D., June 1, 1911.

Total membership of society, eighty-four.

Total membership of society in good standing to include Dec. 31, 1911, seventy-four. They are Drs. Ackerman, Allaben, Andrus, Atchison, Bailey, Barth, Bourland, Broughton, Cattue, Clark, Cochran, Crawford, Culhane, Cunningham, Day, Dunn, Eakin, Farrell, Fitch, Franklin, Fringer, Gill, Goemmel, Green, Hall, Hanford, Hatch, Haughey, Helm, Henderson, Hill, Howard, Howell, W. S. Howell, J. A. S. Howell, Sally Y. James, Jenks, Keith, Kimball, Kinder, Kinley, Klontz, Latham, Lichty, Lofgren, Maas, Markley, R. W. Markley, P. L. Miller, Moyer, Nash, Nyman, Ochsner, E. E. Park, Pattison, Paul, Penniman, Ranseen, Ransom, Richings, Rogers, N. C. Sager, Scott, Snyder, Starkey, Tibbitts, Tuite, Vanderhoof, Walker, Walker, Weirick, Weld, Anna Weld, E. H. Woodward, Wright.

Treasurer's Report: Cash on hand Dec. 31, 1911, \$91.53; receipts for 1911, \$286.50; disbursements for 1911, \$292.10; balance and cash on hand Dec. 31, 1911, \$85.93.

Upon motion and seconded the secretary-treasurer's report was received and ordered on the records of the society. Next in order was the election of officers: the president appointed Drs. Paul and Dunn, tellers. There being only one nominee for president the secretary was instructed to cast a unanimous vote for Dr. Daniel Lichty for president for the ensuing year. Dr. Lichty was declared elected president.

There being only one nominee for vice-president, the secretary was instructed to cast a unanimous vote for Dr. Anna Weld, for vice-president. Dr. Weld was declared elected vice-president.

There being two nominees for secretary-treasurer ballot was taken for Drs. Frank W. Hanford and H. A. Pattison. The tellers announced the ballot: Dr. Pattison, five votes; Dr. Hanford, forty-five votes. Dr. Hanford was declared elected secretary-treasurer.

There being two nominees for delegate to the Illinois State Medical Society, ballot was taken for Drs. W. H. Fitch and Charles E. Crawford. The tellers announced the ballot: Dr. Allaben, one vote; Dr. E. H. Weld, two votes; Dr. Crawford, nine votes; Dr. Fitch, thirty-nine votes. Dr. Fitch was declared elected delegate. Dr. Lee O. Scott was elected as alternate.

Dr. H. M. Starkey was elected censor for three years. Dr. F. F. Kinley made a motion that the secretary be paid fifty dollars from the funds of the society for the faithful and proficient services rendered the past year. Motion carried.

A unanimous vote of thanks was extended to the officers for their efficient services. The retiring president in a complimentary manner expressed his appreciation for the hearty support and cooperation in carrying out the best interests of the society.

Dr. Lichty in brief expressed a desire for the society to continue the good fellowship of the past year, and that the professional and social features of the society may result in a happy consummation.

Adjourned.

FRANK W. HANFORD, Secretary-Treasurer.

—The figures of the third annual statement of expenditures issued by the National Association for the Study and Prevention of Tuberculosis show that during 1911, \$14,500,000 was expended in the campaign against tuberculosis. Of this \$11,800,000 was spent for the treatment of patients in sanatoriums and hospitals and for the erection of sanatoriums; \$850,000 for examination and treatment of cases of tuberculosis in dispensaries and \$500,000 for educational campaigns, and the remainder, \$1,300,000, for the treatment of patients in open-air schools, prisons and insane hospitals, and for local boards of health.

—The medical science room of the Evanston Public Library was formally opened and presented to the library by the donors, January 3. The room was founded in honor of Dr. Edward H. Webster and contains the Walter S. Christopher library, endowed; the physicians' collection, donated; the Sarah H. Brayton collection, donated, and the Edward H. Webster library, endowed. The library contains about 600 volumes and in addition twenty-six medical periodicals. The presentation address was made by Dr. Will Walter, trustee.

NEWS OF THE STATE

NEWS

—Dr. Chauncey Sherrick of Monmouth, who was operated on January 14 for gall-stones at the Monmouth Hospital, is now convalescing.

—Dr. A. J. Garrison, formerly of Buckley, Iroquois County, Ill., while returning from visiting a patient on July 8, 1911, suffered a cerebral hemorrhage. After weeks of illness he partially recovered, but being unable to resume practice, sold out to Dr. D. Schott of Troy, Ill., removed to 5821 Julian Avenue, Indianapolis, and retired from practice.

—The attention of contributors to the JOURNAL is called to the necessity of having all copy for publication clearly typewritten, *double spaced*, on *standard sized typewriter paper* with *wide margins*. Observance of these requirements will show that you are considerate of the printers and will avoid the delay in publication necessitated by the return of copy. Stenographic notes of addresses are occasionally so rewritten by the author with a pencil or pen that they are almost illegible. Away with carbon copies and tissue paper.

—A testimonial feast in honor of Dr. Otho Boyd Will was given by the Peoria City Medical Society, Jan. 23, 1912. This took the place of the annual banquet of the society and was given at the Crève-Cœur Club. It was one of the most successful and enjoyable functions ever given by the society. There were seventy-five present at the banquet.

Dr. Will served as president in the year 1894, and as councilor of the State Society, 1899-1907, and was for many years one of the most active workers in the organization of the profession in Illinois. He had been identified with the Peoria City Medical Society since 1868, and has written a great deal on the interesting history of the early members of the profession in central Illinois.

After the excellent feast had been served Dr. R. A. Kerr, who acted as toast-master, introduced the following gentlemen, who responded to the toasts in the order given:

Introduction.—“He adorned whatever subject he either spoke or wrote upon.” Dr. W. B. Short.

Our Guests from Abroad.—“Be kind and courteous to these gentlemen, feed them with apricots and dewberries; with purple grapes and mulberries; and pluck the wings from painted butterflies, to fan the moonbeams from their slumbering eyes.” Dr. C. D. Thomas.

Recognition.—“Recognition is the only paradise from which we cannot be turned out.” Dr. J. F. Percy, Galesburg.

The Doctor in the Home.—“Fully half of the population whether much or little worth, found the watcher waiting for them, when they came upon the earth.” Dr. Carl Black, Jacksonville.

The Altruism of the Profession.—“But the greatest of these is charity: faith may be lost in sight, hope ends in fruition, but charity extends beyond the grave, even to the boundless realms of eternity.” Dr. D. W. Graham, Chicago.

The Social Side of It; the Doctor Must Play.—“And this was the wonderful story told as the twilight fails, while the monkeys were walking together holding each others’ tails.” Dr. C. B. Horrell, Galesburg.

Eulogium.—“Praise is a debt we owe unto the virtues of others, and do unto our own, from all whom malice hath not made mute, or envy struck dumb.” Dr. W. O. Ensinn, Rutland.

Response.—

That’s why I like old friends like you,
 Jes ’cause you’re so abidin’;
 Ef I wuz built to live fer keeps
 My principal residin’
 Would be amongst the folks ’at kep’
 Me allus thinkin’ of ’em,
 And sort o’ eechin’ all the time
 To tell ’em how I love ’em.

—Dr. O. B. Will.

The committee in charge of the banquet was: Drs. E. E. Gelder, W. R. Allison, C. U. Collins, R. A. Hanna, R. A. Kerr.

Dr. Will’s address was in the nature of a review of the work which he had been instrumental in performing during his connection with the state and local societies. The occasion marked his retirement from active medical society work.

PERSONALS

Dr. J. M. Pfeifferberger of Alton started for Panama January 16.

Dr. William H. C. Smith, Godfrey, started on a trip to Panama, January 16.

Dr. Paschall N. Bowman, Gillespie, is reported to be seriously ill with typhoid fever.

Dr. Charles H. McElfresh, Springfield, was assaulted and robbed in Chicago, January 7.

Dr. Clarence E. Pierce, O’Fallon, suffered severe bruises in a runaway accident December 29.

Dr. Franklin S. Davis, Peoria, fractured his right arm while cranking his automobile, January 4.

Dr. Edward Enos has left Jerseyville, and is now in practice with his father, Dr. W. H. Enos, at Alton.

Dr. Elmer L. Kenyon, 15 East Washington Street, Chicago, announces his return from Europe.

Dr. and Mrs. W. H. C. Smith of Godfrey left for Panama. The doctor is conducting an excursion party.

Dr. F. R. Pitner of Clay City, the oldest living physician in the state, recently celebrated his ninety-ninth birthday.

Dr. Cornelius J. Donovan, Waynesville, overcome by cold while making a call January 8, fell from his buggy and is reported to be in serious condition.

Drs. Joseph Z. Bergeron and Joseph Beck have been appointed heads of the department of diseases of the nose, throat and ear at Loyola University, in succession to Dr. Hugh Blake Williams, deceased.

Secretary Fiegenbaum was the guest of the Montgomery County Medical Society on January 23, and delivered an address to an audience of 500 people at the Union Avenue Christian Church, Litchfield, Ill.

Dr. S. V. Hageman of North Chicago is taking an extended rest from his practice and will make his headquarters at Ford, Kan. During his absence Dr. A. E. Budde will take charge of his practice at North Chicago.

REMOVALS

Dr. R. M. Richey has removed from Menard to Anna, Ill.

Dr. F. W. Larrabee of Alton has removed to Portland, Ore.

Dr. Louis F. Alrutz has removed from Oregon, Ill., to Chicago.

Dr. D. B. Seger has removed from Morrison, Ill., to Willow, Cal.

Dr. W. J. Marney of Granite City has removed to Hiteman, Iowa.

Dr. F. W. Larrabee of Alton, Ill., has removed to Portland, Oregon.

Dr. Darwin Schott has removed from Troy, to Buckley, Iroquois County.

Dr. Darwin Schott of Troy has removed to Buckley, Iroquois County, Ill.

Dr. Marie S. Bergh of 810 Belmont Avenue, Chicago, has removed to Fox Lake, Ill.

Dr. R. J. Grimes has removed from Jerseyville to 3140 South Canal Street, Chicago.

Dr. W. T. Thackery of 1532 Wilson Avenue, Chicago, has removed to Fowlerton, Texas.

Dr. Charles C. Tellesin, Henrotin Memorial Hospital, Chicago, has removed to Wynot, Neb.

Dr. C. W. Rominger of 404 South Halsted Street, Chicago, has removed to Waupon, Iowa.

Dr. Charles H. Parker has removed from 4002 Cottage Grove Avenue, Chicago, to Santa Cruz, Cal.

Dr. Frank L. Hammerstrand of Michael Reese Hospital, Chicago, has removed to Rankin, Ill.

Dr. A. C. Sheppard, a former member of Madison County, has removed from Bostwick, Neb., to Modoc, Ill.

MARRIAGES

GEORGE RUBIN, M.D., to Miss Erma Weill, both of Chicago, December 19.

GEORGE K. WORDEN, M.D., to Miss Harriet Vissering, both of Alton, January 4.

ERIC J. DANEK, M.D., to Miss Pauline Smith, both of Chicago, December 20.

ERNEST MILLER, M.D., Newman, Ill., to Miss Opal Spaugh of Hope, Ind., recently.

HOWARD C. McMILLIN, M.D., to Miss Lena Beyer, both of Morton, Ill., January 3.

ABE MARK NEWTON, M.D., Chicago, to Miss Parsons of Pontiac, Ill., Nov. 19, 1911.

MAX BIESENTHAL, M.D., to Miss Claudine Bacharach, both of Chicago, December 20.

CHARLES ADDISON ELLIOTT, M.D., to Miss Genevieve Cole, both of Chicago, December 20.

WILLIAM O. HOLMBURG of Chicago to Dr. Clara Edmunds of Springfield, Ill., January 25.

SAMUEL METCOFF, M.D., to Miss Ella Felicitas Rappaport, both of Chicago, December 31.

COLLIN H. WILCOX, M.D., to Mrs. Elisabeth Baker, both of Princeville, Ill., December 25.

LEWIS WINE BREMERMAN, M.D., to Miss Margaret Thomas Alexander, both of Chicago, January 11.

HARRY R. CARSON, M.D., Princeton, Ill., to Miss Emily Sarlls of Mount Vernon, Ill., December 20.

JOHN FRANCIS LEWIS, M.D., Depue, Ill., to Miss Ida Samuelson of Princeton, Ill., at Ottawa, Ill., December 14.

BARZILLA MILTON HUTCHINSON, M.D., Chicago, to Miss Marie Nelson of Portland, Maine, in Chicago recently.

GEORGE K. WORDEN, M.D., to Miss Harriet Visering, both of Alton, at the Upper Alton Presbyterian Church, January 4.

CHARLES F. FREYTAG, M.D., Rock Island, Ill., to Miss Martha M. Beatty of Avening, Ontario, at Chicago, November 25.

DEATHS

JOHN P. BRUCE, M.D., Rush Medical College, 1902; died at his home in Chicago, December 24, from pneumonia, aged 37.

CHARLES JOHN CREIGHTON, M.D., Rush Medical College, 1879; formerly of Chicago; died at his home in Redlands, Cal., November 27, aged 69.

H. C. BARKHAUSEN (years of practice, Illinois, 1877); said to have been the oldest practitioner in Alexander County; died at his home in Unity, November 9, aged 94.

ERNEST C. SCHOLER, M.D., Chicago Homeopathic Medical College, 1888; Harvey Medical College, Chicago, 1898; died at his home in Chicago, November 22, aged 48.

CHARLES HOBART PAGUE, M.D., McGill University, Montreal, 1867; a surgeon of volunteers during the Civil War; died at his home in Chicago, January 10, from pneumonia, aged 60.

ALEXANDER M. VAIL, M.D., Northwestern University Medical School, Chicago, 1882; of Rock Rapids, Iowa; died at the home of his sister in Chicago, December 17, from heart disease, aged 63.

JAMES A. FLAUTT, M.D., College of Physicians and Surgeons, Keokuk, Iowa, 1881; for several years coroner of Jersey County, Ill.; died at his home in Otterville, December 24, aged 63.

ANDREW EDMUND MACDOWELL, M.D., New York University, New York City, 1849; since 1851 a practitioner of Galesburg, Ill.; died at his home in that city, December 15, from pneumonia, aged 86.

WILLIAM B. SIMS, M.D., Kentucky School of Medicine, Louisville, 1879; a practitioner of Champaign County, Ill., since 1870; a veteran of the Civil War; for two terms magistrate of Urbana, Ill.; died at his home in that city, December 23, aged 75.

CHARLES J. C. FISCHER, M.D., Washington University, St. Louis, 1877; a member of the American Medical Association and Mississippi Valley Medical Association; alderman, and in 1887 mayor of Carlinville, Ill.; died at his home December 15, aged 57.

MILTON ROBERT BAILY, M.D., Western Reserve University, Cleveland, Ohio, 1882; of East Peoria, Ill.; local surgeon of the Peoria and Pekin Union Railroad; for several years treasurer of the village and a member of the board of school inspectors; died in St. Francis Hospital, Peoria, November 22, from tuberculosis, aged 56.

ABRAHAM M. MILLER, M.D., State University of Iowa, Iowa City, 1888; formerly a member of the American Medical Association; attending physician to the Dixon, Ill., Public Hospital; a member of the board of directors of Carthage College; district surgeon of the Illinois Central System; died at his home December 11 from heart disease, aged 51.

Ralph E. Starkweather, M.D., of Evanston, was born June 16, 1844, being the eldest son of Charles R. Starkweather, a pioneer who came to Chicago in 1833. Graduated in the early sixties from Williams College, where he was a member of the Kappa Alpha Fraternity, Dr. Starkweather studied medicine at Columbia University and Bellevue Hospital, New York. Coming west in 1870 he practiced his profession in Chicago and Illinois for twenty years, taking an active part in all movements affecting public sanitation. He was assistant to Secretary Rauch of the State Board of Health for several years.

Dr. Starkweather was a man of singularly gracious presence, speaking ill of no one, and always courteous, generous and kind. While he had not engaged in active practice for many years, he was always interested in medicine and medical practice, and was a delightful friend and companion. Numerous friends in Chicago, Evanston and Springfield mourn his sudden death. Dr. Starkweather is survived by his wife, Mrs. Annie Adams Starkweather, and their 6-year-old son Ralph; also by three brothers, Frank H. and Charles H. of Chicago, and Chauncy C. of New York. Mrs. Edward G. Mason was a sister.

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ORIGINAL ARTICLES

CHRONIC FOCAL INFECTIONS AND THEIR ETIOLOGIC RELATIONS TO ARTHRITIS AND NEPHRITIS *

FRANK BILLINGS, M.D.

CHICAGO

There is nothing new in the principle involved in the subject of the paper. It has long been known that acute rheumatic joint infections are the result frequently of a primary infection of the faucial tonsils, or tissues about them. Pneumonia is doubtless the frequent result of the sudden change of a non-virulent to virulent type of pneumococcus whose common habitat is the upper respiratory passages in city dwellers. It has been shown that a common source of infection in epidemic cerebrospinal meningitis is the nasal mucous surfaces. Acute endocarditis also has its source, in many instances, from the faucial tonsils. Acute parenchymatous nephritis is frequently the result of the toxemia of diphtheria. Acute gonorrheal arthritis has its source in a focal infection of the urinary or genital tract. A local tuberculous focus may cause systemic infection.

SITE OF FOCAL INFECTION

1. The faucial tonsils, the peritonsillar tissues and supratonsillar fossæ. In this may also be included the lymphoid tissue embraced in the pharyngeal tonsil and elsewhere in the nasopharyngeal space. The lymphoid tissue comprised in the tonsillar tissues is most abundant in childhood, and frequently becomes atrophic in adult life. The site of this tissue subjects it to infection of various kinds. The abundance of this tissue in the child probably explains the frequency of infections like acute rheumatic fever, diphtheria, tonsillitis, etc., in the earlier periods of life. The fact that chronic, septic, focal infection may lie latent in the tonsillar tissue has not been generally recognized. That this focal infec-

* Read before the Chicago Medical Society, Nov. 15, 1911.

tion may produce a chronic systemic disease is established by clinical experimentation.

2. Abscesses of the gums and alveolar sockets, pyorrhea alveolaris and septic types of gingivitis may also cause systemic disease of various types.

3. The various sinuses about the head — maxillary, ethmoidal, sphenoidal and frontal, may also harbor focal infection and cause systemic disease.

4. Bronchiectatic and pulmonic cavities due to chronic disease may also produce chronic systemic infections.

5. Chronic ulcers of the gastro-intestinal tract, especially of the bowels. This source is probably rare and more problematic than that of any other systemic infection.

6. Chronic appendicitis. Chronic catarrhal appendicitis may produce not only the local discomforts including disturbance of the functions of the digestive organs, but it may also be a focal source of systemic infection with the damage done chiefly to the cardiovascular apparatus.

7. Cholecystitis and cholangitis with or without calculi have been recognized as a source of systemic infection, the brunt of the damage apparently falling on the cardiovascular apparatus and kidney.

8. The urinary tract including the pelvis of the kidney, the bladder and more particularly the prostate gland. Pyelitis of whatever type, even when there is only moderate obstruction of the drainage of the kidney pelvis, may produce myositis, arthritis, etc.

9. Genital tract. The prostate and seminal vesicles are a common source of infection of gonorrheal arthritis and probably of ordinary septic infections. The Fallopian tubes and uterus are less common as a source of chronic systemic disease in all probability. It is said that the parametrium is a more common focal source of infection.

10. Local, septic, submucous and subcutaneous foci anywhere in the body may be a source of systemic disease.

THE SYSTEMIC RESULTS OF FOCAL INFECTION

1. Chronic arthritis is one of the most common results.
2. Nephritis both acute and chronic.
3. Cardiovascular degenerations.
4. Chronic neuritis and myalgia (myositis).

The studies and experiments embodied in this paper are limited to the arthritides and to subacute and parenchymatous nephritis. Of these chronic, deforming arthritis, commonly known as arthritis deformans, a chronic osteo-arthritis of hypertrophic or atrophic type, comprise the majority of the studies. Next to the arthritides the largest number of cases comprises subacute parenchymatous nephritis and chronic parenchymatous nephritis.

The work has been done on private and clinic patients in the Presbyterian Hospital. The bacteriologic and histologic studies and the animal experiments have been carried on by Dr. D. J. Davis and by Dr. Homer K. Nicoll.

Mode of Procedure.—The patient presenting evidences of chronic cardiovascular disease, nephritis or arthritis, is carefully examined in reference to previous disease which might be related to the existing condition and also for the existence of focal infections somewhere in the body. When a focal point of infection has been located and seems rationally related to the systemic infection, it is removed if possible, surgically or by some other means. An attempt is made to thoroughly eradicate the focus of infection. Appendectomy, drainage of the gall-bladder or of the pelvis of the kidney is insisted on not only because of local discomforts related to these diseases, but quite as important, to prevent further systemic degeneration. The prostate and seminal vesicles easily may be reached by the finger and the septic contents removed. If necessary vasectomy and drainage may be carried out. Transillumination of the head may be made to determine the presence of sinusitis. The skilled specialist is necessary to remove these conditions by operation or treatment. The faucial tonsils should be enucleated. Ordinary tonsillectomy leaves an abundance of lymphoid tissue which may be sealed over by the operative scar and leaves a worse condition than that for which the operation was made. Adhesions between the tonsils and pillars of the fauces frequently wall in foci of infection in peritonsillar tissues. The supratonsillar fossa may contain lymphoid tissue and continue a source of focal infection even when the faucial tonsil is removed. Ulcerative gingivitis, small abscesses under the gums and collections of pus in the alveoli require vigorous treatment. Ill-fitted crowns on teeth and much bridge work may harbor septic infection in the mouth and produce systemic disease, and when found should be removed.

Careful examination of the tissues or secretions removed by manipulation or operations have been made microscopically; cultures of bacteria attempted and in the work we have done, animal experimentation has been carried out in many instances.

Illustrative conditions as found in patients suffering from chronic arthritis of a deforming type and subacute and chronic parenchymatous nephritis are included in this report. More than thirty cases so far have been under close observation whose original focal infection appeared to be in the tonsillar tissues. It is impossible to give all of the results in these patients at this time because a good many of the patients are still under observation. The result of the method of treatment in the majority of the patients has been most successful. In two patients of the advanced type of chronic deforming arthritis, no beneficial result was obtained. Following the report of the patients treated, the method of treatment will be further amplified.

CASE RECORDS

ARTHRITIS

CASE 1.—Mrs. A. F. R., aged 38 years. Multipara. Osteoarthritis of left hip. Disease had existed for six years with shortening of the extremity and pain, stiffness and lameness upon exertion with gradually increased severity. Four pregnancies with complicated deliveries; one miscarriage. Patient was well nourished and presented in addition to the disease of the left hip, hypertrophied

and infected faucial tonsils, ruptured perineum with a retro-displaced large uterus. Blood: hemoglobin 80 per. cent., reds 4,350,000, whites 8,000. Twenty-four hour collection of urine 1525 c.c., 1.010 acid, no albumin, no sugar, no casts, no red cells, few leukocytes. X-ray of hip showed erosion of upper border of acetabulum with mushroom enlargement at juncture of head and neck of the femur, some flattening of the head. Treatment: Plastic pelvic operation and uterine curettage done by Prof. J. C. Webster. The tonsils were thoroughly enucleated by Dr. George E. Shambaugh. From the cut surface of the tonsils a nearly pure streptococcus was obtained in culture. A rabbit inoculated with resulting acute multiple arthritis. In a few days the animal died and from the infected joints and the heart's blood of the animal, pure cultures of the streptococcus were obtained. The patient was given a modified rest cure. Six months after leaving the hospital a letter from the patient stated that she was feeling well, could walk, play golf, ride horseback and perform any physical effort without discomfort. A slight limp due to shortening of the left extremity remained.

CASE 2.—Mrs. J. W. J., aged 40 years. IV-para. Osteoarthritis atrophica chronica. First seen January, 1907. For about eighteen months the patient has had swelling and stiffness and pain upon motion with some deformity of small joints of hands, feet, knees, wrists and elbows and more recently stiffness and lameness upon moving, in the cervical and dorsal spine. Previous condition of health good. During whole period of illness treatment for chronic arthritis in which salicylate of soda and other anti-rheumatic remedies were used. Recently a "streptolytic" serum was given by deep injection, as much as 100 c.c. per day for four days and then repeated upon the sixth. Reaction with temperature of 102 F. and general malaise followed each injection. Now the patient is weak, nervous, poor appetite and general stiffness upon exertion in the affected joints. Menstruation regular. Examination: Blood, hemoglobin 50 to 55 per cent.; reds, 4,100,000; whites, 12,500. Urine: twenty-four hour collection normal. Tonsils moderately enlarged, adherent to the pillars of the fauces and crypts moderately infected. General examination as to the organs of the body negative. Pelvic organs normal. Many of the joints of the fingers spindle-shaped, crepitate upon motion; both wrists enlarged and fluctuate. Swelling and tenderness of small joints of feet and more especially of the metatarsophalangeal; cervical spine, tenderness upon motion. Rest cure treatment and summer spent at Asheville, N. C., gave no relief. There was progressive development of the disease in all of the joints. On August 15, 1907, the tonsils were thoroughly enucleated by Dr. Otto T. Freer. A rest treatment was then instituted with restorative tonics. Treatment with syrup of iodid of iron immediately followed the tonsillectomy. All of the joints became considerably worse and there was redness, swelling and pain upon motion. The patient could walk only with great discomfort. In April, 1908, there was great improvement. The patient was able to walk two and one-half miles a day without fatigue or pain. There was still some deformity of the joints of fingers and some tenderness along the course of the right musculospiral nerve. Blood examination showed normal condition. In 1910 patient was re-examined and normal conditions found. The patient expressed herself as feeling entirely well. No cultures were made from this patient's tonsillar tissues.

CASE 3.—Mrs. E. W., aged 50 years. I-para. Osteoarthritis chronica, mixed type. Admitted to the Presbyterian Hospital Oct. 16, 1909. For two years there had been swelling, tenderness, pain upon motion and deformity of many of the joints of extremities. Began in feet and hands and extended to larger joints and finally involved cervical spine. The condition was progressive. There was malnutrition, loss of weight from 160 to 129 pounds. For years the patient had been subject to attacks of acute tonsillitis. She had also suffered for years from pyorrhea alveolaris.

Examination: Poorly nourished, very nervous and irritable. Mouth badly infected, many stumps of carious teeth some of them loose in the sockets, gums retracted and infected, tonsils large, rough, adherent to pillars of fauces and crypts infected. Breath offensive. Heart, lungs, abdominal organs and pelvic

organs normal. There was swelling with some deformity of both ankles, right metatarsophalangeal, both knees, right middle and left fingers, the wrists, and elbows. Some contraction of hamstring muscles prevented complete extension of legs. Both biceps tendons of arms contracted which prevented extension of forearm. Twenty-four hour collection of urine was normal in amount and specific gravity and contained a few hyalin casts. Blood: hemoglobin 90 per cent.; reds, 4,600,000; whites, 13,400. On Oct. 18, 1909, both faucial tonsils were enucleated by Dr. George E. Shambaugh and one week later the roots of carious teeth were thoroughly removed by Dr. Frederick Moorhead. From the cut surface of the tonsillar tissues a pure culture of streptococcus was obtained. A rabbit inoculated with a culture suffered from acute multiple arthritis and died in a few days. The streptococcus was regained from the infected joints and from the heart's blood. The patient was permitted to return to her home too soon and did not fully carry out directions as to rest treatment. Some time elapsed before the alveolar processes were absorbed and the mouth remained sore. On April 3, 1910, she returned to the hospital where rest treatment was instituted with resulting marked improvement. The patient gained in weight from 129 to 140 pounds. After the return home frequent communications by letter with the patient and her physician have shown that the progress of the disease has entirely stopped. Some of the deformities were so great that one could not expect entire anatomical restoration. The last communication is dated December, 1911, in which the patient says that the strength of her upper extremities and spine is entirely normal. There is some fatigue in the lower extremities after attempting to walk for any great distance, but there is a continued improvement even in this respect.

CASE 4.—J. H., male, married, aged 37 years. Bookkeeper. Osteoarthritis hypertrophica chronica. Admitted to the Presbyterian Hospital Dec. 9, 1909. There has been swelling, tenderness and soreness in the knees, ankles, left wrist and right jaw and right temporo-maxillary joints, during past four years. The first trouble began in the right knee following a fall. A diagnosis of tuberculous arthritis was made at that time and the knee joint was injected with iodoform emulsion on four different occasions. This gave no relief. After one year the left knee became involved and this was also aspirated. Then followed the involvement of other joints named. Recently he has had tonsillitis, but does not recall that he suffered from the disease since childhood. Denies venereal disease. Has four healthy children. Excepting for the arthritis is well.

Examination: Both tonsils greatly enlarged, rough and many follicles show cheesy masses. Unable fully to open the mouth. Both knees greatly enlarged, the right measuring 40, the left 39 cm. Motion limited. Small rice-like bodies can be felt in both joints. Both ankles are swollen, tender, slightly limited in motion. Spinal column is not involved. General examination did not show any abnormal find of importance. Blood: Hemoglobin 72 per cent. (Dare), reds 4,750,000, whites 9,500. Prostate not enlarged; no exudate obtained from stripping prostate. On Dec. 19, 1909, both tonsils thoroughly enucleated by Dr. F. Gurney Stubbs. Cultures from cut surfaces of tonsils yielded hemolytic streptococcus in pure culture. A rabbit inoculated with the streptococcus developed acute multiple arthritis and died in one week. A streptococcus was obtained in pure culture from the joint exudate. The heart-blood was sterile. Fluid from the right knee to the amount of two ounces was cloudy, yellow and sterile. Patient left the hospital on December 18 improved both as to joint condition and general health. A report recently from him stated that he had practically returned to normal condition.

CASE 5.—Dr. A. W. A., aged 40 years, married. Osteoarthritis hypertrophica chronica of spine. Was admitted to the Presbyterian Hospital March 20, 1911. Complained of stiffness and soreness with pain upon motion in hips and shoulders which began five years before as an attack of apparent lumbago. The condition gradually involved the whole back and during the last winter pain has extended to the left side of the neck and radiates around the chest making it difficult to

breathe. Stiffness and soreness increased after lying or sitting, aggravated by jars in walking or driving. Periods of improvement followed by worse conditions. Some time the joints of the fingers were involved during acute exacerbation of the spinal trouble. Does not remember that he ever suffered from severe tonsillitis. Has lost 30 pounds in last year. Had a gonorrhea of mild type fifteen years ago.

Examination: Tonsils small, adherent to pillars of fauces and some of the crypts can be seen infected. Heart and lungs normal. Abdomen negative excepting for rigidity of abdominal wall. Spinal column rigid. Tenderness to pressure along the spinous process. Some tenderness upon motion of both shoulders and hip joints but no crepitation. Prostate not enlarged, not tender and no exudate obtained by stripping the glands. On March 25, 1911, both tonsils were thoroughly enucleated by Dr. George E. Shambaugh. Tonsillar tissue small in amount, but small abscesses found deep in the tissues from which a pure culture of streptococcus was obtained. A rabbit inoculated intravenously developed acute arthritis which progressed into a chronic form of osteoarthritis. The animal lived nearly two months, became emaciated and at the time of death had several enlarged joints with exostosis and subluxation of the left shoulder. A streptococcus was isolated from the exudate in the joints. The patient has steadily improved, has played golf during the summer and has followed his professional duties. A letter dated December 18, 1911, states "my general condition is extremely good. I have added 30 pounds to my weight and have lost the sense of fatigue from which I suffered. I can move much more rapidly and comfortably and rest well at night. I still suffer from periods of decline, but these are very short in duration. My spine has improved wonderfully, I can stand almost straight and the pain is almost gone. There is still some limitation in motion especially in the neck, but there is steady improvement.

CASE 6.—Dr. E. S. E., aged 26 years, single. Polyarthrititis, subacute. Admitted to the Presbyterian Hospital March 2, 1911. Pain in both knees, left ankle, small joints of both feet especially of the metatarsophalangeal and some soreness in lumbar spine. Tonsillitis began ten years ago and after that time an exacerbation of an arthritis of feet and knees was exaggerated. Was obliged to go to bed. Had an attack of tonsillitis with arthritis six years ago. There was swelling and tenderness of joints named. The tonsils are large, rough, crypts infected with whitish exudate. Lungs and heart normal. Abdominal organs normal. After two weeks of treatment the patient was discharged as subjectively well. Later patient developed chronic arthritis involving small joints of feet, ankles, knees and wrists. January, 1911, had acute appendicitis which was operated upon. Before the patient left the hospital his tonsils were enucleated by Dr. Friedberg. A pure streptococcus was obtained in culture and inoculated into a rabbit. Acute multiple arthritis developed and the rabbit continued ill for a considerable period and then recovered. Following the enucleation of the tonsils the patient passed two weeks in the country at rest. Improvement was steady and progressive and by the middle of September he was entirely free from all joint involvements and able to return to his professional work.

CASE 7.—Mrs. C. C. M., aged 30 years, 1-para. Osteoarthritis atrophica chronica. Admitted to the Presbyterian Hospital May 17, 1911. Patient complained of soreness, stiffness and swelling and some redness in the small joints of feet and hands, knees, shoulders and wrists. The joint trouble appeared first in September, 1910, and continued until February, 1911, when there was a rather sharp exacerbation. She is always worse in the morning. There has been no fever. She is nervous, has a good deal of occipital headache and pain in the back. Appetite and digestion are good. Bowels moderately constipated. Average weight 108 pounds. No disturbance of the urinary organs. Menstruation regular, lasts four days, but is painful. Had a miscarriage three and a half years ago. Had frequent sore throat since an attack of scarlet fever when she was a child. Pain in left side few years ago, which was called "pleurisy."

Examination: Patient frail and sallow; tonsils enlarged, rough, adherent to pillars and yellowish exudate could be seen in crypts. Lungs and heart normal.

Abdominal organs appear normal. Pelvic examination shows no abnormal condition. Urine, twenty-four hour collection normal. Blood: hemoglobin 75 per cent., reds 4,600,000, whites 6,000. On March 23, 1911, tonsils thoroughly enucleated by Dr. George E. Shambaugh. A pure streptococcus was obtained in culture from the cut surfaces. This inoculated into a rabbit produced an acute multiple arthritis. Animal died and the culture of streptococcus was obtained from the exudate of the joints. Twenty-four hours after the enucleation of the tonsils, patient left the hospital without my knowledge. She kept up and about and suffered more with joint pain than for a long time. She was then put to bed upon a rest cure treatment and immediate improvement occurred. On Sept. 25, 1911, patient reported herself as improved in every way. Joint trouble practically gone. She still complains of lessened strength and endurance.

CASE 8.—Miss M. I. P., aged 39 years, nurse. Arthritis atrophica chronica. Seen first Dec. 7, 1910. Patient complained of swelling and stiffness in both knees which began a year and a half ago. Constantly present, but periodically worse. No pain when quiet. Aggravated by motion and tire. Left index finger became involved in 1910 and later the right elbow. Tonsillitis off and on for four years. Has noticed an increase of joint disturbance with tonsillitis. General condition good. Bowels regular. Menstruation normal.

Examination: Well nourished. Teeth good. Mouth clean. Tonsils enlarged, rough, both infected, right more than left. Heart and lungs normal. Abdominal organs negative. Blood: hemoglobin 85 per cent., reds 4,600,000, whites 9,000. Urine: twenty-four hour collection showed normal condition. Both knee joints swollen, crepitate on motion and are tender. No exudate. Right elbow swollen and tender. Left index finger spindle-form. Tonsils enucleated by Dr. George E. Shambaugh. Cultures made from cut surfaces of tonsils gave a streptococcus in almost pure culture. Streptococcus injected into rabbit produced acute multiple arthritis. The animal died and from the exudate of the joints and the heart's blood a pure culture of the streptococcus was obtained. On June 27, 1910, patient wrote that she had taken a rest cure for ten days and had resumed her work in a graduated way. Had been slight but gradual improvement until about middle of May, then she rapidly improved and considered herself entirely well.

CASE 9.—Mr. I. M., aged 27 years, single. Traveling salesman. Osteoarthritis hypertrophica chronica. Admitted to the Presbyterian Hospital May 25, 1911. Complained of limitation of motion and pain in right elbow, both knees, left sternoclavicular and left temporo-maxillary. Trouble began three years ago. Onset insidious. Began in knees with swelling, pain on motion. Two months later toes, fingers, elbows, shoulders and jaw became involved. Was treated at hospital in Pittsfield, Mass., and cast put on one knee. This gave temporary relief. Since that time the course has been one of exacerbation and decline, but he has never been free from some debility. Had scarlet fever with double otitis media when a child. Denies venereal disease. Does not remember to have suffered from tonsillitis.

Examination: Right forearm cannot be fully extended because of contraction of biceps muscle. Elbow joint not involved. Left knee joint is swollen with effusion into synovial sac. Soft structures about joint boggy and thickened. Hamstring muscles contracted. Right knee joint shows abnormally free motion. There is exostosis on external surfaces of outer condyle. Left sternoclavicular articulation is moderately swollen, tender and painful on motion and mouth cannot be fully opened. Other joints are normal. Lungs and heart normal. Mouth clean. Teeth sound. Tonsils are not enlarged, but are ragged and are buried between adherent pillars and show point of exudate in follicles. Abdominal organs normal. Prostate is not enlarged and no exudate can be obtained upon stripping the organ. The urine in single and twenty-four hour collection is normal. Blood: hemoglobin 76 per cent. (Dare), reds 4,100,000, whites 8,400. The tonsils were thoroughly enucleated by Dr. George E. Shambaugh; 30 c.c. of a clear fluid was obtained from the left knee joint. This was sterile and microscopically only a few polynuclear leukocytes were shown. A streptococcus

in pure culture was obtained from the eut surfaces of the tonsils. A rabbit inoculated developed acute multiple arthritis and died in a few days. A pure culture of streptococcus was obtained from exudate of joints. Autogenous vaccines were made and used upon this patient every week or ten days. On June 25 he showed marked improvement and in September returned to his usual occupation which he followed without much discomfort. On December 22 the patient wrote that his condition was much improved and that there was practically no pain in the joints and very little if any stiffness. Slight swelling still remains in the left knee. He had had three vaccinations and to the vaccinations he ascribed much of his improvement.

CASE 10.—W. J. F., aged 30 years, married, brewer. Arthritis rheumatica chronica. Patient admitted to the Presbyterian Hospital Sept. 11, 1911. He has suffered from attacks of rheumatism beginning when he was 7 years of age with frequent attacks during the last twenty-one years. Finally chronic arthritis resulted. There was a decided rheumatic family history. Had gonorrhea fifteen years ago from which he made a good recovery. On admission to the Presbyterian Hospital he presents swollen, painful right ankle, right index and second fingers and right elbow. Tonsils are enlarged, rough and infected. The left border of the heart measures 12 cm. from the midsternum. A soft systolic murmur heard in right second interspace, not transmitted. Urine examination normal, including specimen and twenty-four hour collections. Blood: examination normal find. Prostate not enlarged and exudate could be stripped from the gland. On September 26 the tonsils were thoroughly enucleated by Dr. George E. Shambaugh. From the eut surfaces of the tonsils almost pure cultures of the streptococcus were obtained. This inoculated into a rabbit produced acute multiple arthritis from which the animal died in a few days. The streptococcus was re-obtained from the joint exudate and heart's blood. Phenomenal improvement followed the enucleation of the tonsils. The first two or three days the joints were more swollen and painful. Then immediately began improvement and for the first time in many years the patient is now entirely free of arthritis.

These case histories are good examples of arthritis deformans and include but a few of the many who have been so managed, but are sufficient in number to illustrate the principles of the paper.

SUBACUTE AND CHRONIC PARENCHYMATOUS NEPHRITIS

CASE 1.—Miss L. R., aged 22 years, Chicago. Was admitted to the Presbyterian Hospital Sept. 11, 1909. Two months ago had an attack of acute tonsillitis with broncho-pneumonia. Following this developed edema of face and hands, a pasty pallor, headache and nausea, and it was found that the urine contained albumin and a good many hyaline, granular and epithelial casts.

Examination showed marked pallor, edema of face, lower extremities with some free fluid in the abdominal cavity. Heart and lungs negative. Liver not enlarged. Spleen not palpable. Blood: 4,000,000 reds, 18,700 whites, 63 per cent. hemoglobin (Dare). Urine: twenty-four hour collection 900 c.c., 1.020, much albumin, many hyaline and granular casts, much blood. Arterial tension (Stanton) 145 mm. systolic. Tonsils very large, rough, infected with adhesions to the pillars of the fauces. The patient was kept under treatment at the Presbyterian Hospital from September 11 to November 13, upon a suitable diet, free bowel actions every day and an iron alkaline treatment with gradual improvement in general condition with a better urine output, less general dropsy with an improvement in the blood condition, but on the whole the patient did not advance much toward recovery. Therefore, on Jan. 5, 1910, she was again placed in the Presbyterian Hospital and the tonsils were thoroughly enucleated by Dr. F. Gurney Stubbs. The patient made an uneventful recovery from the tonsillectomy. The patient was kept quiet upon a suitable diet, restorative tonics, etc. On January 19 the twenty-four hour collection of urine was 1470 c.c., specific gravity 1.015, albumin .08 per cent. Three fine granular casts were found in the centrifuged specimen, no blood, no

leukocytes. Before this date the albumin was larger in quantity. There were always many casts and a good many red cells and leukocytes. From this date on the urine slowly cleared up. The general condition of the patient improved until the winter of 1910 and 1911. When in the south (San Antonio, Texas) acquired bronchopneumonia and was severely ill for a time. Nevertheless recovery from this condition followed with a continued improvement of the kidney and general condition. On June 24, 1911, a morning specimen of urine showed no serum albumin, no casts, no blood, no leukocytes. An evening specimen, 1.024, showed no albumin, no casts, no blood. The blood at this time showed hemoglobin 90 per cent., reds 5,400,000, whites 8,000. General hygiene was continued and at the present time the patient is practically well. Oct. 17, 1911, there were 1400 c.c. of urine, specific gravity 1.012, no albumin, and the sediment from a fresh specimen examined at the same time showed no leukocytes, no blood cells, no casts.

CASE 2.—John H., schoolboy, aged 13 years. Was admitted to the Presbyterian Hospital from the Central Free Dispensary on Dec. 4, 1909, suffering from subacute parenchymatous nephritis of the hemorrhagic type. Was operated upon for hernia at the Presbyterian Hospital in September, 1909, and left the hospital well. Suffered from tonsillitis three weeks ago for which no treatment was given. One week ago vomited in the morning after breakfast, again at dinner and supper time. Frequent urination occurred at the same time and it was noticed that the urine was red in color. Became thirsty, with weakness, dizziness and two days ago vomited up some bright blood. Since then has been in bed. Had scarlet fever two years ago. No other disease excepting hernia which was operated on as mentioned. Has had severe attacks of acute tonsillitis.

Examination: Illy nourished boy, marked pallor, edema of eyes, face and some of the lower extremities. Heart and lungs negative. Abdomen negative. Blood pressure in recumbent posture 135 to 145 mm.: systolic. Tonsils large, rough and infected. Temperature slightly elevated but subfebrile. Pulse and temperature practically normal. Blood: reds 3,250,000, whites 9,400, hemoglobin 50 per cent. (Dare).

Urine: Twenty-four hour collection 1200 c.c. 1.008, cloudy, red, with blood, acid reaction. .1 per cent. albumin by weight. Many twenty-four hour collections of urine were made with practically same results. Tonsillectomy was advised and enucleation of tonsils was done by Dr. F. Gurney Stubbs on January 17. Boy made an uneventful recovery from the operation. Was kept quiet in bed upon a suitable non-nitrogenous, non-salt diet. Bowels free and as soon as the hemorrhage in the urine ceased, was given restorative iron tonics. The blood improved gradually. On January 10, a little more than a month after admission, the reds were 4,500,000, the hemoglobin about 70 per cent. Urine, the same date 1500 c.c., specific gravity 1.010, acid, albumin present in small quantities, no blood, no casts, a few leukocytes. Subsequent examination of the boy during the summer of 1910, showed restoration to the normal.

CASE 3.—Dr. R. N. S., aged 26 years, Chicago. Was first seen on Dec. 13, 1909, and was admitted to the Presbyterian Hospital on Dec. 15, 1909. Patient came because albumin had been detected in the urine in October, 1909. As high as 2 per cent. by measurement had been found. A few hyaline and finely granular casts had also been detected. Patient tires easily, has some dull headache and is worried much about kidney condition. Has suffered from attacks of tonsillitis for years past. Had one attack during last winter. Has smoked to excess until recent time.

Examination: Tonsils large, red, ragged, infected. Otherwise throat and mouth normal. Chest, heart and lungs negative. Abdomen negative. No edema of lower extremities.

Urine: Specimen shows specific gravity 1.024, a good deal of albumin, not measured, many hyaline and granular casts, no blood. The arterial tension with the Stanton instrument was 95 mm. systolic. Blood: hemoglobin 85 to 90 per cent., reds 4,500,000, whites 8,600. On Dec. 16, 1909, the tonsils were thoroughly enucleated by Dr. Rhodes. Since that time the patient has been examined and

the urine is found entirely clear, and the patient remained in good health. A letter from the patient dated Dec. 20, 1911, states that the urine is free of albumin and casts. "Am feeling well and have had no evidence of nephritis for the last year and a half."

CASE 4.—Roy Y., aged 18 years, schoolboy. Was first examined on May 13, 1910. A year and a half preceding this time a physician had found albumin and many leukocytes in the urine. There had been no headache, no edema and the patient thinks no fever. He had suffered from scarlet fever, pneumonia twice, the last time one year before and had had many attacks of tonsillitis.

Examination showed well developed, nourished boy of fairly good color. The lymph-nodes in posterior triangles of neck moderately enlarged. Tonsils enormously enlarged, red, ragged, and crypts filled with yellowish exudate. Heart and lungs both normal. Abdomen negative. No edema of face or legs. A specimen of urine, 1.012, albumin in rather large amount and the microscope showed hyaline and granular casts, and a few kidney epithelia and leukocytes. The arterial tension 130, systolic. The important relation of the kidney to the infection of the tonsils was explained to the parents and the attending physician, Dr. W. S. Picotte, of Ishpeming, Mich., and thorough enucleation of the tonsils advised. This was done, but I fear inadequately, during the summer of 1910. He spent the next winter in Florida in school and reported that his general condition had been much improved. On Sept. 12, 1911, he came for examination. The bases of both tonsils still remained and were red, somewhat infected, the general condition good, the urine acid, a faint trace of serum albumin, but no casts and no leukocytes. Arterial tension 125. The condition was explained as improved and regret expressed that the tonsils had not been really enucleated. Was advised to have urine re-examined from time to time and if albuminuria continued to have remaining portions of tonsils dissected out.

CASE 5.—Miss S. T., aged 20 years. Was first examined through the courtesy of her physician, Dr. Albert Smith of Parsons, Kansas, on July 6, 1911. The complaint was extreme weakness, swelling of the lower extremities and abdomen and anemia. The history showed that in November, 1910, the patient had a cold with infection of the throat. About a month later patient became very tired at a dance and it was noticed that the feet became swollen. Albumin and casts with blood were found in the urine. The patient was taken to some mineral springs in Texas and drank quantities of water. Rapid edema of face, extremities and body resulted. Has had no headache, no fever and no disturbance of vision. Slight cough recently. Had scarlet fever at 7 years of age.

Examination: A tall slim girl, very pale, marked edema of face, lower extremities, free fluid in peritoneal and a moderate amount in both pleural cavities. Few lymph-nodes palpable in posterior triangles of neck. Apex of heart 8 cm. from midsternum. A blowing murmur over the pulmonary area. Arterial tension 140 mm. systolic, pulse 78 per minute, temperature normal. Blood: hemoglobin 53 per cent. (Dare).

Urine: Specific gravity 1.012, much albumin, many hyaline and granular casts and many red cells and leukocytes. A good many kidney epithelia. The patient placed in Presbyterian Hospital upon an appropriate salt free diet. At the hospital the urine measured in twenty-four hours from 600 to 650 c.c. on different days. Specific gravity 1.018 to 1.020, contained a great deal of albumin, many hyaline and granular casts, many leukocytes and kidney epithelia and a good deal of blood. The tonsils were enucleated by Dr. Friedberg and the weakness of the condition of the patient necessitated two operations with an interval of one week between. The dropsical condition gradually diminished and the patient improved in general condition. On July 21 there were 1,620 c.c. of urine, specific gravity 1.010 with less albumin, fewer casts and no blood. On July 29 the total urine was 1,620 c.c., specific gravity 1.010, little serum albumin, few hyaline and granular casts, few red cells and few leukocytes and kidney epithelia. At this date the patient left the hospital and spent the remainder of the summer in Canada following out a rest treatment with non-nitrogenous diet salt free and a restorative tonic of the syrup of the iodid of iron, free bowel actions daily. On

Sept. 29, 1911, a re-examination showed a much improved condition. There was but a trace of albumin in the urine, very few hyaline casts, the dropsy had entirely disappeared excepting that when the patient was up and about for the greater part of the day, there was a slight swelling about the ankles. The red cells were 4,800,000, hemoglobin 65 to 70 per cent., whites 10,000. A letter recently from the patient's mother shows still further improved condition. On Dec. 23, 1911, urine was examined, showed specific gravity 1.015, yellowish-brown color, small amount of serum albumin and centrifuged deposit showed few leukocytes and two hyalo-granular casts. On Jan. 4, 1912, a letter from her physician, Dr. Albert Smith, states that the physical examination showed a slight edema above each ankle. Patient looks well. Has gained in weight and strength. Blood count at that date showed 4,252,000 reds, 8,200 whites, 80 per cent. hemoglobin, and a letter from the mother of even date states that the patient is feeling fine, does not seem to have any aches or pains and is gaining in flesh and strength.

CASE 6.—Mr. C. L., aged 23 years. Foreman in wholesale tailoring establishment, Chicago. Examined on May 6, 1911. Came for examination because albumin and blood had been found in urine. Is easily exhausted after exertion and also early in the morning. Appetite is not disturbed. Sleeps well as a rule. Bowels move regularly. Has had varicose veins of legs for a long time. Has suffered from acute tonsillitis on several occasions during the last few winters. Had typhoid at 12 years of age. No other serious illness.

Examination: Moderate pallor of skin, no enlargement of lymph glands. Tonsils both very large and infected. Heart, apex 9 cm. from midsternum, left border 11 cm. No irregularity. First sound moderately rough and impure. No accentuation of second sounds. Lungs normal. Abdominal organs negative. No edema of lower extremities. Urine: Great deal of albumin, good many casts, red cells, leukocytes and kidney epithelia. Blood: hemoglobin 70 per cent., reds 4,000,000, whites 8,000. Arterial tension 110 mm., systolic. Condition of kidneys and probable relation to local infection of tonsils explained to patient. Advised to have the tonsils thoroughly enucleated. On Nov. 4, 1911, the patient was seen by request. He had had the tonsils thoroughly enucleated by his own physician and had had a month's vacation which he spent in the country upon simple non-nitrogenous food and had kept the bowels moving freely every day. At this time the urine, a specimen, contained no albumin, no casts, no red cells and only a few white cells. The patient expressed himself as feeling entirely well. On Nov. 4, 1911, a specimen of urine was examined, showed no serum albumin, no casts, a few leukocytes, no reds.

Reports of other cases are not made at this time because it would make an article of this kind too long, but subsequent reports will be made on other patients.

THE EFFECT OF THE INOCULATION OF ANIMALS WITH THE CULTURES OBTAINED FROM INFECTED TISSUES

It is noteworthy that the streptococcus obtained in almost pure culture from many of the patients when inoculated into animals, produced an acute arthritis either single or multiple. and in many of the animals produced an arthritis of deforming type. Furthermore, from the dead animals' tissues the streptococcus has been again obtained in cultures. It is also true that the cultures from the tonsils of patients who had no evidence of systemic infection, contained the streptococcus practically identical with those patients who had systemic diseases. Inoculation of the strains of the streptococci obtained from the tonsils of individuals, without systemic disease, has not yet been experimented with enough to

know what the result on animals would be. It is an experimental fact that the streptococcus of any source may produce acute joint lesions in inoculated animals, especially rabbits. In most of the animals inoculated with the strain of streptococcus obtained from our patients, the usual acute arthritis occurred. In some of the animals the joint process became chronic and developed the marked anatomic changes (exostoses, rice bodies, atrophy of cartilage, subluxation, etc.), found in osteo-arthritis of man. It is also notable that in three of the patients suffering from nephritis, the strain of the streptococcus obtained from the tonsillar tissues of these patients produced albuminuria in the inoculated animals. No other strains produced albuminuria.

A few of the patients have been treated with autogenous vaccines. The vaccines invariably produced reactions when injected in the dose of from ten to five hundred millions. This reaction consisted of marked tenderness, redness and swelling and frequently of rise of temperature of varying degree with constitutional disturbance in the form of general discomfort, aching muscles, headache, etc. Leukocytosis of varying degree would sometimes follow the injections. Tenderness in joints would also sometimes occur with the vaccinations. So far it cannot be said that the autogenous vaccinations have been of any special value in a group of patients. Individual patients have apparently shown greater improvement with the vaccinations than without them.

General hygienic treatment has been necessary in all the classes of patients treated and one would naturally infer that this general treatment had a good deal to do with the result. With the arthritis cases it has been found just as necessary to continue a long and yet variable rest treatment with good food, restorative tonics and the various forms of individual treatment usually employed in the management of this group of diseases. Assistance has been rendered by Dr. John Ridlon, Dr. Charles A. Parker, Dr. E. W. Ryerson and others in the arthritis cases, by such measures as were found necessary in individual patients. Casts have been applied to extremities, or to the spine, contracted tendons have been stretched and other necessary manipulations and corrective measures used.

In those patients who, for some reason, could not or would not follow out the details of after-treatment, rest, etc., improvement was not as soon obtained or not as fully secured as in those patients under command. This, however, does not mean in my opinion that the final results are due to the after-treatment alone, for in past years the same care in the general treatment did not give the same degree of good results that has been obtained in later years by the methods suggested in this paper.

Further Experimentation Necessary.—It naturally occurs to one that there must be some other element present in individuals lacking in some patients which permits the systemic disease to attack them while others escape who present practically the same local condition with chronic focal infection. Many people suffer from chronic hypertrophic tonsillitis with chronic infection, or an excess of lymphoid tissue in the nasopharynx with consequent anatomic obstruction and lack of drainage, or have chronic sinusitis, or chronic focal disease in other portions of the body and yet

appear to be entirely well. Naturally the question suggests itself that there must be some protective agency present in certain people and lacking in others. It is a well-known fact that traumatism, excessive fatigue, general debility from some previous exhausting disease or exposure may be the beginning of an arthritis. We commonly speak of this as a less resisting power in the individual. Can we by some means ascertain what the essential lacking element may be in the individual whose joints are attacked from an existing focal infection? The specificity of the bacteria obtained from cultures from focal infections could probably be proved by investigation of the reaction to blood-serum, the spinal fluid and the exudate in the joints or elsewhere of patients suffering with systemic disease, and some light could probably be thrown on the question by the research into the question of bacterial reaction to the blood, spinal fluid, urine, etc., of patients who have focal infection without systemic disease. A further study would be of value also of the opsonic index and other specific reaction of the blood, spinal fluid, joint fluid, etc., of individuals before and after autogenous vaccinations or after inoculations of polyvalent horse serum made by injection into the horse of several strains of streptococci obtained from patients. Research of this kind is under way in the work which is now being done, and it is to be hoped that a later report may explain some of the conditions which are now obscure.

I think there can be no doubt that the insidious, slow, degenerative processes which occur in many patients who arrive at the meridian of life are due to slow intoxications from chronic focal infections variously located. The medical literature is full of statements of auto-intoxications from the intestinal tract and it is not improbable that this may be a source. It is a fact that with proper hygienic management in diet, exercise, free excretion through bowel, kidney, skin, etc., retrograde changes are delayed and an individual's health much improved thereby, but it is also true that with these measures fully carried out many people still show progressive interstitial nephritis with cardiovascular changes in spite of the best hygienic management. Not infrequently it has been my experience to find that such patients suffer from a chronic infection of the gall-bladder, appendix or prostate, or some other focal infection. The result of the removal of these infections has also been most astounding in many instances. This paper would be too long to discuss further that part of the result of focal infections. I hope to present that phase of the subject in another paper in the near future.

The Necessity for the Removal of Focal Infective Processes.—It is not the purpose of this paper to advocate unnecessary surgical procedure. It is, however, necessary to do something radical when one finds a patient who suffers from a focal disease that may produce acute disease or chronic degenerative changes in any of the organs of the body. Excessive amounts of lymphoid tissue of the faucial tonsils or nasopharynx in children is a double menace. With obstruction and want of drainage, those localities produce not only alterations in the bony framework of face and chest, but offer a source of systemic infection which may be ruinous to the individual. There can be no other reason for the prevalence of rheumatic

fever in children than the frequency of local infections in throat and nose. Quite as frequently children have endocarditis without other symptoms or rheumatic infection which has its source in the throat. There may possibly be a reason for the retention of some of the lymphoid tissue in the faucial tonsil, but so far, the physiologists have not been able to give a reason for its retention. Nor, I think, has there ever been an argument advanced to show harm from the practical enucleation of all of this tissue. I think any one who has noted the difference in the physical and mental makeup of a child before and after the removal of large amounts of lymphoid tissue in the throat, must be convinced that the change is due not only to a better air space, but also probably to the removal of a constant, even though it may be slight, systemic infection. It is an interesting observation of Dr. Thomas L. Gilmer and of others, of foci of specific infection about the gums and the presence of abscesses about the roots of the teeth, often unsuspected, which must be recognized as a source of systemic infection that has not received the attention from the medical profession which it deserves. I think anyone who has seen the illuminating results of a better physical health in patients whose dirty mouths have been made as nearly as possible clean, must be convinced of this source of systemic infection.

I think the specialist, as well as the general practitioner, has not fully recognized the importance of the relation of the focal infection to systemic disease, and has not been fully awake to the necessity for entire eradication of the focus. Partial removal of the faucial tonsils by whatever means, frequently leaves a condition as bad or worse than the original one. An infected tonsil or tonsillar tissue need not be large in bulk. In some of our patients small and apparently innocent tonsils contained abscesses from which pure cultures of streptococci were obtained. The scar of operation may seal over infected crypts in lymphoid tissue. An incomplete operation on the mouth may still leave alveolar abscesses. In several instances of patients included in this series, more than one operation on the tonsils has been made necessary because of incomplete removal of the focus of infection by the first operator.

The purpose of this paper has been to call the attention of the profession to a source of general disease which, while recognized by a few, is entirely ignored by the many. No one would have the effrontery to say that the lack of recognition of the focus of infection is absolutely detrimental to the best interest of the patient, nor would one say that the treatment advocated is specific in that all patients are made whole and well by it, but it is believed that the basic principle involved as a cause of systemic disease which should be recognized, should be sought for more frequently and when the focal infection, wheresoever it may be located, seems to be related to the systemic disease, radical measures should be instituted to remove it. When this is done those general measures which long have been recognized as essential to the well being of an individual should be instituted so that nothing will be left undone which may restore an invalid to health. So far the experimental work done seems to prove clinically the truth of the principle advocated.

CHRONIC ORAL INFECTIONS *

THOMAS L. GILMER, M.D., D.D.S.

CHICAGO

In 1891. Miller, in the preface to a series of articles published in the *Dental Cosmos*, Philadelphia, entitled "The Human Mouth as a Focus of Infection," says: "During the last few years the conviction has grown continually stronger among physicians, as well as dentists, that the human mouth as a gathering place and incubator of pathogenic germs performs a significant rôle in the production of varied disorders of the body, and that if many diseases whose origin is enveloped in mystery could be traced to their source, they would be found to have originated in the oral cavity."¹

Miller isolated fifty-eight varieties of microorganisms from the mouth, many of which are pathogenic, or may under favorable circumstances become such.² These findings were verified by Black, Vincentini and others.³

When it is realized that in some or all mouths there may be found at times the bacteria of most infections, the importance of the study of the mouth as a focal cause of disease becomes apparent. For instance, tubercle bacilli are found in the mouths of non-tubercular patients. When the cervical glands are found to be tubercular there can be little doubt but the bacilli often reach the glands from the mouth through alveolar abscess, or through the tonsils or through some suppurating focus in the mouth.

The prevalence of tubercle bacilli in the mouths of those not tubercular is indicated by the experiments of Gilberti.⁴ He injected guinea-pigs, previously subjected to the tuberculin test, with mixtures of inguinal, also of cervical glands taken from children dead of non-tubercular disease, so far as was known. Of thirty animals injected with the cervical gland mixture, eleven died from tuberculosis. Of those injected with the inguinal gland mixture, only two died of tuberculosis.

As a result of food wedging in between teeth malposed, or between approximating teeth having cavities of decay, or between teeth with improper restored contours, the gum septum is destroyed and deep pockets are formed. The injudicious use of crowns and bridges made as substitutes for lost teeth and their faulty adjustment are sources of great danger, since they form pockets which harbor bacteria and are irritants to the gums, peridental membrane and alveolar process. These pockets constantly present granulating walls and afford good incubating centers for pathogenic and other microorganisms, both aerobic and anaerobic. Unfilled cavities of decay in teeth always harbor both saprophytic and pathogenic microorganisms; also unsterilized pulpless root canals, or root canals containing gangrenous pulps or their septic remains, may be equally prolific as incubating centers.

* Read before the Chicago Medical Society, Nov. 15, 1911.

1. *Dental Cosmos*, September, 1891, p. 689.

2. *Pathogenic Bacteria*, McFarland, 4th Ed.

3. *Bacteria of the Sputa and Cryptogenic Flora of the Mouth*, London, 1897.

4. *Medical Practice Series*, 1910, iii, 313.

Many persons are mouth-breathers, either occasionally or generally, due to stenosis from malformation or disease of the nasal fossæ. The nasal fossæ offer barriers to the passage of bacteria through their labyrinthine formation, the hairs and the agglutinating material found on their walls. The mouth offers practically no such obstructions. Those having nasal stenosis breathe largely through the mouth; as a result, there is admitted to the oral cavity, pharynx and tonsils greater numbers of bacteria than when the nose performs its function normally. There may be other causes for lesions of the tonsils, but it is highly probable that the constant passing of bacteria over them from a diseased mouth is the most potent. That bacteria may pass through healthy tonsils without causing them to become diseased has been demonstrated by Wood.⁵ Some, however, find convenient lodging-places in the crypts of the tonsils, where they remain until they become active and produce local or general infection.

Cervical and submaxillary adenitis is especially common in children having diseased teeth and jaws. Frequently the glands are removed and their unsuspected cause, alveolar abscess, left untouched. Odenthal found glandular swellings in 99 per cent. of all children who suffered from badly decayed teeth (abscessed teeth), and only 49 per cent. in those having sound teeth.⁶

Chronic alveolar abscess is so common that few go through life without one or more such suppurations. There are two forms of this disease; that which continually or periodically discharges either into the mouth, nose, maxillary sinus or elsewhere and the blind abscess, which never discharges through a sinus, the pus being absorbed by the granulating walls of the abscess. The former, discharging pus and bacteria as indicated, cannot but be prejudicial to health, and the latter, the blind abscess, offers greater danger. Its presence is generally unobserved by the patient and may be overlooked by the physician, even if the mouth is examined, since it may not present to the eye any clinical evidence of its presence. I think 25 per cent. a safe estimate of the percentage of jaws having suppurating cavities. That greater havoc is not wrought by such foci of infection is due, either to the fact that the virulence of the bacteria and their poisons is insufficient, or to the fact that the individual becomes immune. However, instances are not lacking which demonstrate that such foci of infection are instrumental in causing neuritis, neuroses and secondary infections of the eye, ear and other parts; therefore, when there are manifestations of disease which may be dependent on some local focus of infection, the mouth and jaws, as well as other possible sources, should be examined to discover if they may not hold the key to the solution of the problem.

The question which has not been, but must and will be answered, is, What is the bacteriology of chronic alveolar abscess? When this question and the question of susceptibility and immunity is answered, we can better understand the relation which these pathologic cavities in the maxillæ

5. Jour. Am. Med. Assn., Sept. 9, 1911.

6. Therap. des mal. infect., p. 256.

bear to lesions in the heart, kidneys, lungs, joints, nerves and brain. Here are possibilities not to be ignored. Alveolar abscess is usually considered inconsequential, and when the attention of the profession has been called to it, it has generally excited little interest and been allowed to pass as an insignificant "gum boil." Did similar abscesses exist in other bones of the body, their presence would demand attention, both by the patient and by the physician.

Acute alveolar abscess usually manifests itself in pain, swelling, rigors and fever, but the chronic form often gives no evidence of its presence. Following the subsidence of the acute attack the patient will often be unaware of the continuation of the condition, but unless the tooth causing it is removed, or has its pulp canal or canals disinfected and filled, the chronic form ensues and continues indefinitely, as it is rare that spontaneous cures takes place. Owing to the tortuous shapes of some root canals, it is not possible in all cases to completely sterilize and fill them to their ends, and even if the roots are rendered sterile through canal disinfection, the chronic condition is not always cured. A part of the apical portion of the root in such abscesses is often denuded of its periodontal membrane by suppuration. This portion of the root divested of the soft tissue attachment forms a pocket between itself and the adjacent granulation tissue which is a breeding-place for microorganisms which induce continuous reinfection.

The salivary glands are doubtless occasionally infected by bacteria from the mouth. I have seen two cases of infection of the parotid gland which seemed to be traceable to an infected mouth, and several cases of infection of the submaxillary gland which could be traced to no other source.

It is but natural and proper that patients suffering from endocarditis, renal, joint and other lesions, outside the mouth, should consult the internist, orthopedist or neurologist. On this account the oral specialist has little opportunity to tabulate cases which give any great light as to the constitutional relation existing between the disorders before mentioned and chronic infections in the mouth. I have frequently found marked improvement in the health of patients, following the cure of diseased condition in the mouth, but the treatment has not usually been instituted with other idea than the removal of local lesions. To illustrate:

Some years ago, a man, a little beyond middle life, consulted me relative to a trivial dental lesion. On making a careful examination of the entire oral cavity, I found several small sinuses discharging pus above the bicuspid teeth on one side of the upper jaw. On exploring these openings with a sharp steel probe, a large cavity was discovered in the bone, the result of alveolar abscess, the presence of which was unsuspected by the patient. On inquiring into his physical condition, I learned that for the past year he had had a cough, his digestion was impaired, and much of the time his temperature was slightly above normal. He had frequently consulted his family physician, who examined his heart, lungs, sputum, urine and blood. These gave no clue to the cause of his ill health. His appearance indicated a toxemia. I removed several teeth, curetted the abscess in the jaw and followed it by suitable after-treatment. His fever at once subsided, his digestion was soon much improved, his cough was lessened and finally

disappeared altogether. Although seemingly his physician had made a careful examination, he had overlooked one important factor, the mouth.

Mrs. C., aged 30 years, noticed the appearance and disappearance at frequent intervals of an erythemic patch about the size of a silver quarter on the skin over the left canine fossa. On examining the mouth for a possible cause for this reddened condition of the skin, I found the left lateral incisor pulpless. There was no sinus; the tooth had given no trouble. The only evidence of disease found in the mouth was a slight hyperemia of the gum over the lateral incisor root indicated. The radiograph showed a pus cavity in the bone at the end of the root about the size of a large pea. Disinfection of the root did not effect a cure. I made an opening through the labial wall of the alveolar process, excised the end of the root and curetted the cavity. The erythemic patch on the cheek disappeared and did not return.

Mr. S., aged about 25 years, was directed to my clinic for the treatment of a chronic abscess in the upper jaw in the vicinity of the incisors and cuspid which had proven intractable to ordinary treatment. His physical condition was much impaired, he was emaciated, his skin was sallow, his cheeks hollow, his conjunctivæ pale, eyes dull, and his lips lacked the color of health. His temperature was slightly above normal. I could elicit no history of any other illness, recent or otherwise. His appearance gave the picture of a toxemia. In this case likewise the sharp steel probe revealed a large cavity in the bone, extending from the central incisor to the first molar. Oct. 20, 1911, I extracted the cuspid tooth and curetted the bone cavity. October 27 he returned to the clinic much improved. November 10 his color was normal, his eyes clear, and he seemed to be well.

Did time permit, additional cases, such as Ludwig's angina, osteomyelitis and other infections and toxemias might be cited, which were due to chronic diseases of the jaws and mouth.

A casual ocular examination of the mouth is not always sufficient to demonstrate a blind alveolar abscess, since the tissues overlying the abscess may not always indicate its presence, but by careful scrutiny of the mouth by the eye, aided by an educated touch, a sharp steel probe and the radiograph, all such infected areas in the jaws may be discovered. Since the internist is not usually familiar with all of the pathology of the mouth, and has not the technic and facilities for examination of the mouth and teeth, if the best results are to be obtained, it is highly important that there should be more cooperation between internists and oral specialists.

Pyorrhea Alveolaris.—*Pyorrhea alveolaris* so called, or as better named phagedenic pericementitis, by Black, is a disease strictly of the periodontal membrane. It is very common; more teeth are lost from it than from caries. It is indicated by a progressive destruction of the root membrane of the tooth commencing at the gingival border, generally accompanied by flow of pus and destruction of the alveolar walls. Pus appearing at the gum margin is not always a sign of pyorrhea, as will be shown later. The clinical picture of pyorrhea simulates, though it is not identical with, conditions brought about by indiscreet use of mercury.

Simple calcic inflammation of the gingivæ due to the deposit of salivary or serumal tartar, simulates pyorrhea alveolaris and is mistaken for it. If it be of the salivary type the lime deposited is at the gum margins, on the neck of the teeth, near the openings of the ducts from the salivary glands. If of the serumal type the lime is deposited just beneath the free

margin of the gums, both being productive of pus. Serumal deposits are generally found in pyorrhea pockets, but such deposits when formed are between the cervical margin of the peridental membrane and the root's apex; and the pockets must be there first; while serumal deposits in simple calcic inflammation of the gums are found under the gum margin, but above the occlusal attachment of the membrane. In addition to the physical appearances in pyorrhea, in extreme cases there is always present a peculiar odor which is distinctive. These are the chief characteristic differences between pyorrhea and calcic inflammation of the gums. The removal of all deposits, in simple calcic gingivitis and calcic pericementitis, with good hygiene afterward, usually suffices for a cure, if the removal has not been too long delayed.

The etiology of pyorrhea alveolaris is unknown. It has been attributed to gout, tuberculosis, syphilis, bacteria and other causes. Bacterial examination has often been resorted to in seeking a clue to the cause of the disease, and fungi have been found by Black,⁷ Miller⁸ and Archovey,⁹ which were supposed to bear a causative relation to the disease, but neither have been able to prove the specificity of any one organism.

Independent of the findings of Black, Miller and Archovey, there are indications that pyorrhea is a germ disease, since almost universally persons having it holding close relations with each other, as man and wife, contract it, the one from the other, as the case may be. Children of parents having pyorrhea, when they become adults, are very subject to the disease. This is by no means a positive indication that the disease is infectious, but is suggestive.

The great variety of organisms found in the pockets about teeth affected with pyorrhea alveolaris renders the task of isolation exceedingly difficult.

Owing to the temporary closure of pyorrhea pockets about teeth on extension of infection, an acute condition is frequently observed. It simulates alveolar abscess and is often mistaken for that disease. During this stage, opportunity is afforded for the greater absorption of bacterial poisons and the escape of bacteria into the lymph and blood streams. It is to these causes that we should most commonly expect systemic participation from pyorrhea, rather than from the swallowing of pus liberated from pyorrhea pockets. However, we cannot ignore the danger to patients from the continual swallowing of this pus. True pyorrhea is very intractable to treatment. It may be cured if taken in time, and remain cured, provided the cooperation of the patient may be elicited in proper hygiene afterward.

With few exceptions, the attitude of the profession toward pyorrhea alveolaris, as in chronic alveolar abscess, has been one of indifference. That it should have been supposed that such a disease may exist indefinitely and not be productive of evil is surprising.

7. Black: Amer. Syst. of Dentistry.

8. Miller: Microorganisms of the Human Mouth.

9. Archovey: Internat. Med. Congress, London, 1, 862.

Osler says:¹⁰ "Of the twenty cases of pernicious anemia which I had under observation in 1909, pyorrhea alveolaris was present in more than half. Certain types of nephritis are also believed to be due to oral infection."

In the majority of extensive cases of pyorrhea alveolaris, much purulent matter is discharged into the mouth. Most of it goes direct to the stomach, while some of the bacteria and their products which have not been discharged into the mouth, may pass from the granulating walls of the pus pockets, through the lymph and blood channels, to all parts of the body. A question of paramount importance is, What effect do these poisons have on the system and what are their physical indications?

TUBERCULOSIS OF THE URINARY ORGANS *

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CHICAGO

I have been requested to present in this symposium the subject of tuberculosis of the genito-urinary organs, with the exception of the genital organs of the female. I should like to do this from a clinical standpoint, and attempt in the short time at my disposal to draw a rough sketch of the work as it has impressed me in my own clinic.

In a discussion on tuberculosis of the genito-urinary organs, I want to remind you of the fact that our knowledge is of comparatively recent date. It is hardly necessary to refer to the fact that it was only in 1882 that Koch demonstrated to us the *Bacillus tuberculosis*, and until, I should say, about 1885 we regarded tuberculosis of the urinary tract as inoperable, as difficult of diagnosis, and as a field that was more interesting to the pathologist than to the clinician. I should date our present knowledge of genito-urinary tuberculosis from about 1890, the last twenty-one years, and to the very definite demonstration in about 1890 of the fact that we have in genito-urinary tuberculosis two distinct types, the genital and the urinary cases, which up to that time had been grouped together as one inseparable pathologic condition, and I can remember very well seeing cases before that time that were regarded as being tuberculosis primarily of the epididymis, and then extending to the bladder, and from the bladder to the kidney. We know now, of course, that the condition is very different, and our conception of genito-urinary tuberculosis is now very much the same as our conception of tuberculosis of the hip joint. In a child of 5 or 6 years of age, with a tuberculous lesion of the hip joint, we regard that as being an infection of the hip joint through the circulation. We believe in the majority of cases there is an infection usually through the air passages or alimentary tract; that later the lymphatic glands are involved, and that in addition to the involve-

10. Osler: *Prac. of Med.*, p. 440.

* Read in a Symposium on Surgical Tuberculosis at a meeting of the South Side Branch, Chicago Medical Society, Nov. 28, 1911.

ment of the lymphatic glands we have the escape of tubercle bacilli into the general circulation, and some of the tubercle bacilli are carried to the hip joint to a point close to the line of epiphyseal cartilage and there meet conditions favorable for their development. We are not astonished in this picture to find but one hip involved in this hematogenous infection. We take it for granted that but few bacilli have found their way in the circulation, and that these have unfortunately found conditions in the one hip joint favorable for their development. The same conception should be carried to tuberculosis of the genito-urinary tract.

There are in the genito-urinary tract three positions which seem to favor the development of the tuberculous process when the tubercle bacilli are brought to these organs through the circulation. These three locations are, first, the kidney; second, the epididymis, and, third, the prostate, and on analysis of any of these cases of genito-urinary tuberculosis, you find practically without exception that one of these three anatomic locations is the original primary focus of the condition. I suppose that one can say without much hesitation that these foci in the kidney or epididymis or prostate can be called primary in the sense that they are the overshadowing locations of tuberculosis in the particular individual. The individual may not present clinically any other gross evidence of tuberculosis, but we should keep in mind the fact that they are not really primary, but that they are secondary to some invasion through the respiratory tract or the alimentary tract; although one must admit the possibility of such a condition as this either in hip-joint tuberculosis or in tuberculosis of the kidney; i. e., that the tubercle bacilli may find their way through the respiratory tract directly into the circulation, or through the alimentary tract directly into the circulation, within a limited time, without producing first any local involvement in a lymphatic gland. With this conception, then, of tuberculosis of the genito-urinary tract, let us discuss, first, tuberculosis of the kidney.

Tuberculosis of the kidney, like tuberculosis of the hip, is usually a primary affair. I should say, you would probably find both hips involved in tuberculosis in possibly one case out of twenty, thirty or fifty cases — I am not sure of the accepted statistics. I am rather inclined to think that in about the same proportion of cases both kidneys are primarily involved in the tuberculous process. The involvement in the kidneys is usually a fairly extensive one.

We have in our collection a large number of tuberculous kidneys, and we seldom find a kidney in which the process is at all limited. I think this (indicating) will represent a good type of the ordinary case. When you look at it, you will find that the process, although it is much more marked at the upper pole of the kidney, is very distinct both in the capsule behind and on the split surface of involvement throughout the entire kidney. That should be borne in mind because we suffered in some of our early work from the conception that we have in tuberculosis of the kidney frequently to deal with a limited process, and many of us resort to resection of the kidney with the hope that the resection might cure the disease. One can take this lesson from our pathologic specimen

that clinically when we operate on these cases they are so frequently riddled with tuberculosis that we can eliminate from consideration resection of the kidney as a means of cure. The tuberculous process very rapidly extends along the ureter.

You will see here a very beautiful specimen showing the wide extent of the tuberculous process along the ureter. I think one can accept this, as a rule, that the tuberculous process extends along the ureter and the ureteral orifice in the bladder and soon involves to a greater or less extent the bladder mucosa.

What is the natural history of tuberculosis of the kidney? I think one can say this, that in a limited number of cases a cure is effected. How is that cure brought about? Usually by the obstruction of the ureter, by the kidney becoming a sac filled with tuberculous debris. I have in several cases operated and found a thick fibrous sac filled with tuberculous debris without a single vestige of kidney material, with the ureter quite distended, extending evidently down to the bladder without any tubercle bacilli appearing in the urine at all, and evidently a complete obliteration of the ureter, the patient manifesting no symptoms whatever from that kidney. Undoubtedly these cures resemble very much the cures from psoas abscess in Pott's disease of the spine: there is a walling off of the tuberculous debris and eventually absorption of the abscess or its encapsulation in such a way as to prevent the condition giving rise to symptoms.

I have personally never seen a case of kidney tuberculosis which has healed by the development of cicatricial masses in the kidney itself. That they do occur, I believe has been shown, but they are rare.

Where the individual does not go on to this cure by obliteration of the kidney, the tuberculous process usually goes on to extensive involvement of the bladder and later involvement of other portions of the body. I suppose we must accept the possibility of ascending infection from the bladder from one kidney up the ureter on the other side. I am inclined to believe, however, it is not common, and that infection of the second kidney is hematogenous. We have infection of both hips in hip-joint disease, but we cannot imagine any ascending infection from one hip to the other: where the second hip does become involved it is a hematogenous infection, and the same thing occurs in the kidney.

The diagnosis of kidney tuberculosis to-day is not nearly as difficult as it was a few years ago. The first symptom is frequency of urination. The bladder symptoms stand out prominently: pain above Poupart's ligament, occasional hemorrhages, occasional pain in the region of the kidney; pain in the kidney involved is by no means a constant symptom. As a rule, we do have pain and discomfort in the kidney; occasionally severe renal colic, meaning usually obstruction of the ureter with blood and tuberculous debris, and a marked increase in the intrarenal tension, and in a limited number of cases we find a tumor. The diagnosis is usually made by a process of exclusion, this being done by means of the x-ray, the determination by cystoscopic examination of the condition of the opening of the orifice of the ureter in the bladder, and best of all,

discovering by the ureteral catheter the presence of abnormal urine from one side or occasionally from both sides and the demonstration of tubercle bacilli in the urine.

Within the last two years we have been finding tubercle bacilli fairly constantly in our cases of kidney tuberculosis. We used to regard that as an exceedingly difficult thing, and a few years ago I remember very well making the statement that we did not find tubercle bacilli in more than 50 per cent. of our cases, but I do not hesitate to say now that we find tubercle bacilli in 90 per cent. or more of cases of definite kidney tuberculosis. Occasionally one will have to depend on animal inoculation to demonstrate the tuberculous character of this lesion.

As to the treatment of kidney tuberculosis, I think we can make this statement with a good deal of confidence, that in primary tuberculosis of the kidney, if the case is seen early, and when it is limited to one kidney, and we can make that diagnosis with certainty by means of catheterization of the ureter, the life of the patient is very much safer with an early nephrectomy than by any other plan of treatment.

In the last year or two there has been a reaction against nephrectomy for kidney tuberculosis; it is, I believe, certainly entirely unwarranted. A nephrectomy for early tuberculosis gives a low mortality, and gives the patient a very much better prospect of permanent cure than any other means we have at our command.

What shall we do with the ureter in our nephrectomies? I am not at all satisfied with the way we handle the ureters. I dislike very much to make a very extensive and sweeping operation of exposing the entire ureter down to the bladder, and I have been handling recently the ureters after a nephrectomy by injecting them with carbolic acid and by ligating the ends of the ureters. I have tried bringing the ureter out and injecting it with iodine and with iodoform emulsion and with alcohol, and we have had some successful cases with these methods, and for a time I was inclined to believe that the use of alcohol, bringing the ureter out and stitching it in the wound was the preferable method. I am still open to conviction on this point, and the weak point at present in our nephrectomies for tuberculosis is the handling of the ureters.

In regard to the other treatment for kidney tuberculosis, I will say this, as Dr. McArthur emphasized in connection with tuberculosis of the alimentary tract, that the fresh air and out-door treatment which a patient with lung tuberculosis receives is of enormous value in all cases of surgical tuberculosis.

I am a little doubtful about tuberculin. I have used tuberculin, but I am not at all enthusiastic about it. I think it is difficult to demonstrate the relationship between the use of tuberculin either by the Wright method or by the use of greater doses and the resulting cure. I think the evidence furnished by orthopedic surgeons must be considered in this matter. The orthopedic surgeons, as a group, in handling large numbers of cases of tuberculosis are not very favorably impressed, I take it, by the value of tuberculin. I think tuberculin should be used, however, in these cases of kidney tuberculosis. In cases of tuberculosis of both kidneys

undoubtedly tuberculin and fresh air treatment would seem to be the most intelligent treatment that we can give these patients.

As to the final outcome, Dr. Louis Schmidt made a rather interesting statement to us at a recent meeting of the American Urological Society when discussing this matter. He stated that he was impressed with the fact that few of these cases of nephrectomy for bladder tuberculosis were cured in the sense that all of the tubercle bacilli disappeared from the urine. He quoted some evidence that had been recently offered to show that even where there was an apparent cure, and the patient was well and strong, had regained his weight, and had no symptoms, even in these cases careful examination of the urine often showed tubercle bacilli. I was very much impressed with that statement, and since hearing it in two cases in my own work we have been able to find tubercle bacilli in the urine, even though the patient in one instance had no symptoms. In the other case the nephrectomy wound had entirely healed, the child was strong and well apparently in appearance, but she had an incontinence which gave her a good deal of trouble, but did not seemingly interfere with her general health.

I asked Dr. Kretchmer to make a cystoscopic examination, which he did, and found the bladder was contracted down so that it only held about an ounce and a half of urine. She had extensive bladder tuberculosis extending from the ureter of the infected kidney; in spite of all this she was apparently well as far as her general condition was concerned.

The doctrine, as you know, has been, and we have preached it emphatically, that the bladder mucosa cleans up quite constantly after the removal of the primary focus. I believe we must look a little more carefully into this matter, and I shall be not at all surprised to find that in quite a large proportion of these cases the bladder mucosa has not cleaned up entirely even though the case is apparently clinically cured.

In regard to tuberculosis of the bladder from the kidney, I will simply make this statement, that it is a descending infection. We will accept the position now that primary tuberculosis of the bladder is exceedingly rare, if it ever occurs, and it is either secondary to a descending infection from the kidney or secondary to an ascending infection from the epididymis and vas deferens and seminal vesicles or an ascending infection from the prostate. I have never seen anything do any good in cases of bladder tuberculosis except rest, and that is a difficult thing to give a bladder in cases of tuberculosis because there are a great many drawbacks. If you drain such a bladder suprapubically you often get a tuberculous fistula, with extension of the process along the fistulous tract. The most satisfactory cases of tuberculosis of the bladder I have seen have been drained into the vagina, and in a few of these instances a good deal of relief has been given to the patients. From my own experience of bladder tuberculosis, I think the cases are good ones to leave alone as far as any direct interference is concerned, and I am inclined to think that these are cases where we should make the patients as comfortable as possible and trust largely to the fresh air treatment and to the use of tuberculin.

In connection with the use of tuberculin, we have had several cases of bladder tuberculosis where, in addition to the treatment, the autogenous vaccines from the colon have been used with apparently a great deal of benefit. That point should be emphasized in handling cases of tuberculosis of the bladder.

Tuberculosis of the epididymis is exceedingly common. Dr. Murphy described in a certain way tuberculosis of the epididymis when he discussed the subject of tuberculosis of the tubes. The conditions are very similar. In these cases the infection is hematogenous.

Tuberculosis of the epididymis should be handled early by surgical intervention, for in tuberculosis of the epididymis and tuberculosis of the vas deferens these structures have lost their function. I do not believe any cure of a tuberculosis of the epididymis or tuberculosis of the vas results in the restoration of function of these structures. By a comparatively simple and very safe procedure the epididymis and vas can be removed without depriving the patient of the benefit of his testicles, so far as internal secretions are concerned, and I believe we should take the position in tuberculosis of the epididymis and vas that the best procedure is early radical removal of the infected tissues. I should say, 40 per cent. or more of these cases can be cured by early surgical treatment. That has been our experience. I would add this, however, that without any question these patients with tuberculosis of the epididymis and of the vas should be given the same benefit of out-door and fresh air treatment as cases of tuberculosis of the lung. I have seen very startling cures where patients have refused operative interference in these cases from change of climate, the benefit of fresh air and feeding, thus increasing their resistance. We should add to this the use of tuberculin in minute doses.

When the process has extended to the seminal vesicles, I think we have a very serious picture. I have operated on a few of these deeply seated cases of genital tuberculosis, and I have not improved any of the patients. I doubt whether it is good surgery in the light of our present knowledge to operate on these cases of tuberculous involvement of the seminal vesicles. Of course, when we have a mixed infection with abscess, drainage should be resorted to, but I am inclined to handle these cases without mixed infection as we do cases of tuberculosis of the lung.

Tuberculosis of the prostate is sometimes primary. It is a rare thing. I have operated on three cases of tuberculosis of the prostate by prostatectomy. I think one can safely say that it is very much more rare than tuberculosis of the epididymis or tuberculosis of the kidney. My own conception of tuberculosis of the prostate would be this, that if we could find a case where the lesion is distinctly limited to the prostate and we could make an early complete removal, it would be the better procedure. Unfortunately, in most of these cases the process has widely extended before we operate on the patient, and on that account we should regard cases of tuberculosis of the prostate, as far as treatment is concerned, as belonging to the same group as the cases of lung tuberculosis; that they should be handled by tuberculin and by the general hygienic treatment for tuberculosis.

I have brought from our clinical museum a number of specimens from cases of tuberculosis of the genito-urinary tract. I will show you a number of kidneys which are involved in the tuberculous process. I want to repeat the statement which I made, that these show quite clearly, without exception, the widespread involvement.

Look at these specimens and see how impossible it would be to consider anything except a nephrectomy.

In addition to the kidney specimen, we have some interesting specimens of kidney tuberculosis with occlusion of the ureter.

Here is a specimen of tuberculosis of the bladder, ureter and kidney in a case of tuberculous meningitis. This specimen was removed post mortem.

I show you now a very beautiful specimen of tuberculosis of the prostate. Almost the entire prostate is involved in the tuberculous process.

Here is a specimen of chronic tuberculosis of the urinary bladder, showing great thickening of the bladder wall, and great contraction.

Here is a specimen of tuberculosis not only of the epididymis, but also of the testicle. Here is another specimen of chronic tuberculosis of both the testicle and epididymis. Clinically if cases of tuberculosis of the testicle are seen early, the tuberculous process is limited largely to the epididymis.

Here is a case of ascending genital tuberculosis, beginning in the epididymis and extending to the vas deferens, seminal vesicles and prostate.

Here are two more specimens illustrating tuberculosis of the epididymis.

In conclusion, I should like to make this statement: We are in a position to-day of looking at this entire group of cases, where the internist and general surgeon and genito-urinary surgeon can very well meet on common ground. It is not an intelligent thing for the internist to say to-day that these cases of genito-urinary tuberculosis should be handled with tuberculin and with fresh air and outdoor treatment. On the other hand, it is not an intelligent position for the surgeon to take to-day that these cases of genito-urinary tuberculosis should be handled all by operative measures. Enough light has been thrown on this subject to show the great value of surgical treatment in tuberculosis of the genito-urinary organs. A great flood of light has been thrown on these cases to-day, showing the great value of proper medical management, and undoubtedly many of them can be handled by medical management alone, some of them largely by surgical management, but most of them must be regarded as cases which can be handled properly by the combined medical and surgical treatment.

TUBERCULOSIS OF THE ALIMENTARY CANAL AND
PERITONEUM *

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The atria of invasion of the peritoneum in tuberculosis may be classified as follows: (*a*) through the female genitalia; (*b*) through the alimentary tract; (*c*) through the subperitoneal lymphatic glands; (*d*) through diffuse general miliary tuberculosis — through the blood stream.

Tuberculosis of the peritoneum is more commonly secondary to the tube than any other primary lesion.

Tuberculosis of the mucosa of the tube is present a long time before we are called to attend and receive a history of the case; we believe it is reparative and does completely heal. In the large percentage of cases that have come under our observation it does not heal spontaneously until the fimbriated end of the tube is closed. Tuberculosis of the endosalpinx is the only type of infection of the tube that continues with the abdominal atrium or fimbriated end open. In all other varieties of infection of the tube the fimbriated end becomes rapidly sealed and adherent to the neighboring structures but in simple tuberculosis of the tube it remains open, repeatedly ejecting tuberculous debris into the peritoneum. In unmixed infection the tube remains open, accounting for the recurrent attacks of peritonitis we have as a result of that form of invasion.

In the management of that class of cases formerly we considered it was sufficient to open and drain the peritoneum but unless we induced mild infection so as to seal the end of the tube by adhesions, the treatment was ineffectual and the attacks recurred. The only way to cure it permanently is to remove the tube close to the uterus, excising it from the body at the cornu of the uterus.

In the next variety, in the genital tract, we have tuberculosis occurring in the endometrium of the uterus. We have had two observations of that kind, one occurring in my own and one in the practice of Professor Bastianelli of Rome. I happened to have been in the clinic of this surgeon when he began to do a curettement and penetrated the wall of the uterus. He could not understand why the instrument went through the uterus so readily. He was curetting because the patient was having excessive menstruation. He immediately did a laparotomy and found that there was a tuberculous ulcer which had penetrated to the peritoneal surface of the uterus, and the curet escaped at this point. On the posterior surface of the uterus and broad ligament there were a number of tubercular deposits. In my case we had three deposits in the wall of the uterus in different positions; in each of these the tuberculous eruption came from beneath the peritoneum, but there were no tubercles at a distance except those which one could trace to the lymphatics, differing from the deposits we get on the peritoneal surface from tubal foci.

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I have never seen a case of primary ovarian tuberculosis; they were all cases in which the tube had become adherent to the ovary, the latter forming a tubo-ovarian tuberculosis the same as tubo-ovarian abscesses are formed. The follicle ruptures, the tube becomes attached over the opening and thus infects the ovary. Thus it will be seen that in that class of cases the tubal infection is primary, and infection of the ovary is secondary. Cases have been reported as infections of the follicle through the rupture of tuberculomata into the peritoneal cavity. This we believe is the exceptional route of ovarian infection.

As to the frequency of direct infection of the peritoneal surface by perforation through the walls of the appendix, the caput coli, the large intestine, stomach and duodenum, we believe it practically never occurs. The appendix and cecum are most commonly infected and their coverings are invaded from beneath. I have never seen a case of general tuberculosis of the peritoneum from a perforation of the appendix giving a surface tuberculosis. I have seen extensive tuberculosis of the peritoneum of the second degree type, with no evidence of direct perforation and no evidence of tuberculosis anywhere else except in the appendix.

From a pathologic standpoint we may divide tuberculosis of the peritoneum into three classes:

1. The catarrhal variety, in which there is a great amount of effusion, with deposits of tubercle on the surface.
2. The agglutinated variety where we have slimy, cobweb adhesions so characteristic and typical of tuberculous peritonitis.
3. The circumscribed, encapsulated, caseous variety in which there is liquid tuberculous debris, with destruction of the peritoneal coat of the bowel, and circumscribed organic encapsulations always resulting in permanent peritoneal adhesions. It is impossible in this variety to tell where the primary infection came from in a large percentage of the cases.

Tuberculosis of the caput coli rarely involves the general peritoneum. The hypertrophic variety of tuberculosis of the cecum is quite common, but not as common as it is in the sigmoid. I have never seen a case of tuberculosis of the ileum produce a general tuberculosis of the peritoneum. I have seen cases of extensive tuberculosis of the ileum, in one of which I removed fifty-nine inches of the ileum for tuberculosis. The peritoneum was not infected. The mesenteric glands were in a state of tuberculous liquefaction but had not ruptured. I have never seen a case of tuberculosis of the stomach, nor have I had a case of tuberculosis of the duodenum.

In the small intestines cases of tuberculosis occur near the ileocecal valve more frequently than in any other position.

As to the treatment of peritoneal tuberculosis, from a surgical standpoint we have two ideas in mind. First, if the tuberculosis is circumscribed, is limited to the intestine, if there is no material involvement of the peritoneum, then resection of the circumscribed portion of the intestines is decidedly the operation of election; but if the peritoneum is greatly involved, resection of the intestines is not at all a safe procedure. In many instances in these resections we have failure of union,

and the development of a fistula, which it is practically impossible to heal.

The plan mentioned by Dr. McArthur to-night is one that gives great satisfaction. Another plan consists in performing an appendectomy, washing the intestinal contents out through this opening or through an opening made in some other portion of the alimentary tract. Still another plan is the exclusion of the tuberculous zone of the intestines. If the tuberculous process involves the large intestine we may exclude its greater portion from the fecal current by an end-to-side anastomosis of the ileum to the sigmoid, thus obtaining the same or a better result than from free irrigation. In the small intestine also where we are unable to make resection we may sidetrack or exclude by short circuiting the diseased portion by dividing the bowel, closing the blind end, transposing the proximal end and attaching it below the diseased portion, thereby cutting the diseased portion out of the fecal circulation.

As to the use of tuberculin in connection with these conditions up to the time Paul Goodman presented his four specimens of *complete* repair of tuberculosis of the intestine to the Pathologic Society in Berlin, in 1892, there had never been reported an authentic case of healed tuberculosis of the intestine. Virchow had never seen a case of healed tuberculosis of the intestine. Paul Goodman saw these cases, treated them with tuberculin, presented his specimens and Virchow believed they were the first cases of healed tuberculosis of the intestines. These cases had extensive pulmonary tuberculosis from which they succumbed, in addition to the intestinal tuberculosis; he thus had an opportunity to present the specimens.

Dr. Mack does not report his case as cured. Whether we shall have to give *large doses* of *tuberculin* in tuberculosis of the intestines to obtain the best results, remains to be determined. In our experience with tuberculosis of the intestines we have used tuberculin in small doses with strikingly good effect.

As to tuberculous peritonitis from mesenteric adenitis, I have seen a few of these cases, the mesenteric gland having become infected without leaving an induration in the intestinal mucosa at the atrium of invasion. The atrium invasion is not one of ulceration but one of involvement by tubercle bacilli entering the subepithelial space thus gaining entrance to the lymph-glands, just as cervical adenitis occurs through the pharyngeal mucosa or tonsil without tuberculous ulceration. The glands break down, liquefy and rupture into the free peritoneum, producing a general disseminated tuberculosis of the surface of the peritoneum; the gland itself heals and shuts off the source of tuberculous supply. Occasionally if the patient is seen in the acute attack the gland is open, as was our experience on two occasions. I believe the mesenteric glands are common sources of tuberculous peritonitis.

As to the diagnosis of tuberculous peritonitis, it can be made in a considerable percentage of cases. From my experience it is easier to make the diagnosis in the female than in the male. The thickened leathery condition of the Douglas pouch is one of the striking signs of this disease in the female.

There is no fixation of the tubes such as there is in ordinary gonococcic salpingitis. A doughy resistance of the abdomen is very common, together with a doughy reaction of the abdominal skin after twisting (Deck's sign). The tuberculin reaction aids one materially in making the diagnosis. Circumscribed flatness in encapsulated tuberculosis of the cystic type assists in the differential.

With regard to the treatment of tuberculous peritonitis as it comes under our observation; even where the tube is patent, medical means should be resorted to. We do not open the abdomen any more or at least as frequently as we formerly did, but give the patient tuberculin, developing a constitutional condition favorable to the repair of the tuberculosis. No tissue in the body undergoes repair from tuberculosis so readily as the peritoneum, provided the source of tuberculous débris supply is cut off.

In the cystic variety an opening is made for the purpose of relieving fluid tension and inserting some irritant which induces an inflammatory tissue reaction and polynuclear cytolysis in the cavity, such as iodoform, camphor oil, Venice turpentine, etc.

In the third degree of tuberculosis the surgery is that of *masterly inactivity*. Wherever tuberculous deposits exist which are circumscribed, encapsulated, breaking down and cheesy they should not be disturbed. They are safe through their encapsulation and if meddled with a fistula may result which will not close. Such fistulas do not heal and repair as do fistulas from other pathologic conditions. Drainage of the free peritoneum should never be resorted to. There is no occasion for attacking circumscribed tuberculosis of the peritoneum in cases of mixed infection, except when there is great elevation of temperature and other evidences of pus intoxication. Opening admits of additional mixed infection whether the lesion is pulmonary, renal, mesenteric or osseous. The mixed infection is what hastens tissue destruction and makes the case more serious.

In drainage of circumscribed tuberculous abscesses of the peritoneum where the patient has a high temperature, and the infection is mixed, there is no contra-indication to the opening of such abscesses and draining them, hoping that they may heal. It makes very little difference whether we use oil or some other type of irrigating fluid in such cases. I have used iodine and Venice turpentine and formalin to stimulate the repair of sinuses, and I have found that they heal with equal slowness, if at all. The *greatest improvement in results* has been made through a *properly administered tuberculin treatment*. There is no medicament in the entire range of therapeutics where the patient's individual equation must be so accurately estimated and tested to obtain the best results as in the administration of tuberculin. The negative opinions on the value of tuberculin are based: (1) on a defective knowledge of the rôle of opsonins in the process of repair; (2) on evil results obtained through improper administration of the remedy; and (3) on assumed superior judgment with neither knowledge nor experience to support it. The dosage must be studied in each individual case, as one patient may be given 10,000 times the dose of another and the larger dose be too small and the smaller dose be too large to obtain the best opsonic result.

REMARKS ON TUBERCULOSIS OF THE FEMALE
GENITALIA*

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CHICAGO

There have recently appeared in the *Archiv für Gynäkologie* two articles on tuberculosis of the female genital organs based on post-mortem studies of nearly 10,000 women and girls. Schlimpert of Dresden based his work on 3,514 autopsies, and Simmonds of Hamburg founded his on 6,000. Clinical observations are often misleading and the examination of internal genitals removed at operations gives little idea as to the relative importance of genital tuberculosis and that of other organs. These researches, based on exact anatomical observation in the dead-house, shed some new light on the subject.

Schlimpert's material came from a people deep in poverty. Of his 3,514 subjects, 2,173 had tuberculous lesions of some sort; in 84 per cent. the lung was affected; in 32 per cent. the alimentary tract; in 5 per cent. the peritoneum; 3.5 per cent. of his cases showed tuberculosis of the genitalia, namely, seventy-three of the 2,173. Simmonds, in 6,000 autopsies on the bodies of females, found tuberculosis of the genitals in eighty, namely, 1.33 per cent. Schlimpert's cases of genital tuberculosis were 2 + per cent. of all the cases examined. Schram, who reported in 1882 the results of a study of the post-mortem material of the Dresden institution, found tuberculosis of the genitals in thirty-four out of 3,386 female cadavers examined, namely, 1 + per cent.

In nearly all of the cases there is tuberculosis in other parts of the body besides the genitalia. In over 90 per cent. there is tuberculosis of the lung; in 11 per cent. of the urinary system; in 60 per cent. of the peritoneum. In most instances the older lesions appear to be in the other organs than the genitals. The cheesy deposits and the cicatrized foci are usually found in the lungs or in the mesenteric glands, while the nodular tubercles and the bacillary catarrh will be found in the tubes or the uterus. Often, indeed, there will be also fresh tubercular processes manifest in the respiratory or alimentary organs.

When we come to consider the different organs of the genitals in connection with tuberculosis we find that the tubes lead in frequency, the uterus comes next. In half of Schlimpert's cases the uterus and one or both tubes were simultaneously affected and in two-thirds of those of Simmonds. Isolated tubercular infection of the vagina occurs in less than 5 per cent. of genital tuberculosis and even infection of the vagina in company with that of other parts of the genital tract is uncommon. Of all the genital organs the ovaries are the least liable to tuberculous disease, according to the observations of Simmonds and Schlimpert. Other authors, not basing their conclusions on anatomical material, how-

* Read before the South Side Branch of the Chicago Medical Society, Nov. 28, 1911.

ever, give much more importance to ovarian tuberculosis, estimating it to occur in from 33 to 60 per cent. of genital tuberculous cases.

Tuberculosis in the tubes causes thickening and increased torsion with formation of creamy or cheesy contents. In half of the cases the abdominal ostium is found open. In many there are extensive adhesions of the tubes to the surrounding organs and to each other. The process appears to be of greatest intensity at the abdominal end of the tube. The uterine end is often free, even when examined microscopically. When the ostium is closed there is frequently considerable dilatation of the ampullar end. The general appearance is often like that of any pyosalpinx. One-quarter of the adnexa removed at Martin's clinic in Greifswald showed tuberculosis. The mucosa is usually studded with tubercles macroscopically and microscopically. In many others the mucous layer seems covered with a grayish coating showing no typical tubercles even under the microscope, but the superficial layers desquamated and necrotic and with far more bacilli than in the nodular form. Sometimes there is a bacillary catarrh; that is, the lumen is filled with a mucous fluid and there is no other pathologic appearance except the presence of numerous bacilli in the fluid. This is probably an early form.

In the uterus one finds less often the nodular form but more often the necrotic endometritis similar to the necrotic salpingitis already described. Serial sections often demonstrate that what appeared as isolated nodules are really lymph channels filled up with tuberculous material. These may run into the myometrium. The disease is usually confined to the body of the uterus and the cervix is usually free, except in far advanced cases. As in the tubes, the tuberculosis commonly takes its first seat in the superficial mucous layer surrounding the lumen.

There are several possible sources of infection of the genital system with tuberculosis: first, from the outside through the vulva and vagina; second, from neighboring organs; third, from the infected placenta; fourth, from the blood stream.

That infection is possible through the external genitals must be admitted, although the researches of almost all authorities show this method to be extremely rare. In Schlimpert's series there was no instance of primary isolated tuberculosis of the genitals. In Simmonds' series there were only four such cases, and in none of these was the route of infection proved to be by way of the external world through the vulva. In one of the four the patient was 71 years old at the time of death. The uterus was filled with tuberculous pus but there was an old cicatricial closure of the cervix which prevented any communication from the vagina. Another subject was a widow aged 69 who died of pneumonia and whose tubes were intact but who had fresh tuberculous deposits in the endometrium. The third case was a woman of 31 years who was taken with acute parametritis a few weeks after marriage and who died of peritonitis resulting from perforation into the rectum and peritoneum. The uterus and vagina were absolutely free but there was double tubercular pyosalpinx. The case appeared to be one of gonorrheal salpingitis later infected with tuberculosis. The fourth case was a young woman

of 31 whose husband died of phthisis six months before her death. He, however, had no trace of genital tuberculosis. On account of metrorrhagia curettage was done and in the matter removed giant-celled tubercles were found. The extirpation of the uterus and tubes was followed by a fatal peritonitis. The autopsy showed the lungs free, a few nodules in the pelvic peritoneum, the tubes and uterus were already found to be tuberculous, the vagina, cervix and vulva were free. In this last case there is a strong probability that the tuberculous infection entered by the external genitals during coitus, although the husband had no genital tuberculosis and the woman had none in the vulva or vagina. There is always a possibility of the carrying of bacilli from infected semen or from an unclean penis upward into the female genital canal by means of the motile spermatozoa. In this connection Friedmann's experiment may be noted. He found that, eight days after injecting tubercle bacilli into the vaginas of rabbits just after coitus, bacilli were always found in the embryos. Marital infection with tuberculosis is probably rarely by way of the genitals but almost if not entirely by way of the more usual avenues, especially the mouth.

From neighboring anatomical structures infection may spread to the genitals. In a few instances the infection may extent from the lower bowel or the bladder. More often it comes from the peritoneum. In none of Schlimpert's cases did the process appear to have come to the peritoneum from the genital organs, but in seven cases the peritoneal tuberculosis was apparently the origin of that in the genitals. Simmonds' conclusions were directly opposite to those of Schlimpert. He found tuberculosis of the peritoneum in forty-five of his eighty cases of genital tuberculosis, without counting the many certainly secondary nodules in the cul-de-sac of Douglas in cases of tubal tuberculosis. In many cases the age of the process in the tubes was evidently greater than that in the peritoneum. In many also the chief tubercular deposits in the peritoneum were in the direct neighborhood of the abdominal ends of the tubes. Simmonds concludes that, in the vast majority of instances of tuberculosis of both genitals and peritoneum, the process in the genitals is the cause and not the result of that of the peritoneum. On the other hand, the entrance of bacilli through the open ostium from the peritoneum doubtless does occur. This appeared to be so in four of his cases. Baumgarten's experimental tuberculosis of the peritoneum in animals was never followed by the disease in the tubes. His observations bear out the theory that the infection rarely travels from peritoneum to tubes but rather vice versa.

In none of the cases of Simmonds or Schlimpert was the infection proved to be from the placental site but in two it was possible. Of course even here the ultimate cause may have been hematogenous. Of Schlimpert's series hematogenous origin was possible in sixty-seven of the seventy-three, and probable in twenty-eight. In only five of Simmond's eighty cases of genital tuberculosis were tuberculous areas in other portions of the body wanting. The first manifestation in the genital organs is in the great majority of cases in the tubes and here are found the

oldest lesions as shown by their cheesy character, the great cicatrization around the deposits and the rather frequent calcareous formations. From the tubes the infection often extends in the direction of the flow of mucus into the uterus. Rarely does it pass the internal os.

Studies of anatomical material have usually shown that tuberculosis of the female genitalia is a disorder of a minor grade as compared with tuberculosis of other portions of the body. In none of the cases of either Schlimpert or Simmonds was the genital disease the cause of death. So much more important was the disease elsewhere that in only three of the cases did the subjects come to the dead-house from the gynecologic wards.

We will perhaps be pardoned some conclusions in respect to treatment of genital tuberculosis in the female. In most text-books and in many articles in journals even of a recent date, more or less radical operation is recommended. Thus August Martin, at the 1908 meeting of the American Medical Association in Chicago, advised that tubercular ulcerations of the vulva and vagina be removed by the curet and by strong astringents, and that internal organs of the genitalia be removed when hopelessly invaded by the tubercular process. On the other hand, Martin preferred to remove only those organs and parts of organs which were so thoroughly diseased that healing seemed impossible. Many others recommend removal of affected tubes, ovaries and even the whole of the uterus, provided the general condition of the body will permit of operation. Winter even advises the extirpation of apparently normal tubes when the abdomen is opened for tubercular peritonitis. The existence of tubercular lesions elsewhere in the body, even in the lung, is not considered by many as sufficient contra-indication for operation.

It appears to me that the modern disinclination to operate in tubercular disease which is manifest among the most progressive surgeons has not extended to the gynecologic surgeon as much as it should. Notable exceptions are Schauta, Bumm and Doederlein. In the discussion on urogenital tuberculosis at the last German gynecological congress there were, however, many conservative speakers. The fact that the primary mortality in operations on the tuberculous genitals is high, ranging from 10 to 13 per cent., that the disease in the genitals is not in itself deadly, and that the primary focus is usually inaccessible, were points brought out by the conservatives. We hear very little now about operating on the tuberculous lung. The orthopedist rarely performs radical operations on tuberculous bones and joints. Tuberculous kidneys are allowed to remain undisturbed more often than formerly. A tuberculous bladder is not often scraped. There are still many general surgeons, expert in operative gymnastics, who operate radically on tubercular lymphatic glands, but even among general surgeons protests are being heard against this procedure. The tendency in treatment of tuberculosis anywhere in the body is to employ rest, local and general, and the modern hygienic antituberculous methods. In general tuberculosis may be said to be a disease which tends to recovery when treated early by measures which have for their object the keeping of the body in its highest state of nutrition.

Rest is an important item in the modern treatment. Only the very minimum of exercise is permitted. Pleasant surroundings are essential and congenial companionship. Nutrition is brought to its highest pitch by the use of the easiest digested and the most highly concentrated foods. Above all is fresh air held to be indispensable. Smoke, dust and noxious vapors are avoided by treating tubercular patients as far as possible in the country. In short, everything is done to preserve what strength and vitality the patient already possesses and to enable his body to accumulate more and more. The shock of operation, the irritating effects of ether, the inhalation of buccal and nasal fluids with the deep breaths of the anesthetic coma, the nausea and other digestive disturbances for days afterward, the loss of blood, the necessary diminution in the ingestion of food, the depressing effects of hospital life, and the lack of fresh, pure air are all great handicaps inseparable from any operation. All these things are bad for a patient suffering from tuberculosis and all are antagonistic to the general trend of modern treatment of tuberculosis.

Experience seems to show that tubercular peritonitis may often be cured by simple drainage of the abdomen. A large number of cases of tubercular peritonitis are probably caused by tuberculosis of the tubes. Again, many times the diagnosis of tuberculosis of both peritoneum and of tubes is made at the time of the laparotomy. Therefore, with the abdomen already opened, it is proper to remove evidently tubercular tubes, provided that they are not firmly adherent and provided that such removal is easy and speedy. This admission does not commit me to advising hysterectomy when the uterus is found or believed to be tuberculous. The uterus is not the continual feeder to the peritonitis which the tube is. Furthermore, even in expert hands, hysterectomy is a far more shocking and dangerous operation than removal of slightly diseased tubes. It also opens up far more vascular and lymphatic channels and therefore tends much more to extension of the local tuberculosis to adjacent and remote parts of the body.

Again, what is the use of subjecting the patient to the dangers of operation in order to remove organs which are usually only a secondary feature in the tuberculosis from which the patient is suffering? In the vast majority of instances there are other foci elsewhere in the body, almost always in the lung. The tuberculosis of the genital organs is very seldom or never the cause of death. The removal of such organs can very rarely remove all the tuberculosis. It even may liberate into the vascular system bacilli which were comparatively harmless in their former location. Local operation in most cases of tuberculosis of the female genitalia with the hope of curing the patient may be compared to putting on a fur cap when one is freezing to death because of insufficient clothing. In the great majority of cases the chances of the patient will be better with hygienic antitubercular treatment.

JOINT TUBERCULOSIS *

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I know little of bone tuberculosis except as a part of joint tuberculosis. My remarks will be confined to that despite the fact that I am on the program for a paper on "Tuberculosis of the Bones and Joints."

Dr. Frank Lydston once said that he opposed raising the standard of requirements for admission to medical schools and also opposed raising the standard of teaching in the schools; that he thought about all a medical student ought to be taught was to whom to refer his patients. In covering the subject of joint tuberculosis in the time allotted to me at this meeting I can hardly be expected to tell you more than to whom to refer your patients. However, the general practitioner and the specialist in other lines ought to be able to make a diagnosis in the average case of joint tuberculosis, and ought also to have a clear idea of the general principles of treatment and the prognosis as to life, duration of treatment and ultimate result.

The onset of joint tuberculosis is insidious and slow, and at times intermittent. In this it differs from joint troubles due to traumatism and to the acute infections of joints; but does not differ from osteo-arthritis in this respect. The first objective symptom is the restriction of motion at the joint to some extent and in every direction. This restriction, due to involuntary muscular action, is peculiar to joint tuberculosis, and differs from the restriction in osteo-arthritic, hysterical and all other kinds of stiffness at the joint. It is a "live" restriction as compared with the "dead" resistance of cured joints. It always stops at a certain place and has no elastic feel, whereas the hysterical joint stops sometimes at one place and sometimes at another and usually springs back with an elastic resistance. This involuntary muscular resistance must be learned with the hand by the sense of touch and not with the ear by the sense of hearing it described.

Atrophy of the muscles controlling motion of the diseased joint is a very constant symptom: I have found it absent in only one or two instances. Muscular atrophy does not occur in cases with hysterical joints, but it may occur in osteo-arthritis. Muscular atrophy is a progressive condition; a small limb may be congenital and not progressive in its comparison with the other limb. Pain is a pretty constant symptom in tuberculous joint cases; usually coming on some weeks or months after the onset of stiffness; but it may be absent from start to finish. If present it is usually intermittent as compared with the constant dull ache of osteo-arthritis and the progressively increasing pain of malignant bone disease. It is not usually a local pain at the seat of disease, but a "distant" pain, as the knee pain of hip disease and the belly-ache of Pott's disease. The pain in joint tuberculosis usually subsides after the joint

* Read in a Symposium on Surgical Tuberculosis at a meeting of the South Side Branch, Chicago Medical Society, Nov. 28, 1911.

has been immobilized and the patient put in bed for two or three weeks. But the pain of malignant bone disease is not relieved by protection and rest. Joint tenderness and joint sensitiveness may be present or absent in almost any joint disease and therefore is not of value in differential diagnosis.

The "cold abscess" of tuberculous joint disease, containing ichor, and not pus, is a very valuable evidence if present, but it is present to the touch and sight in only about half of the cases. The same may be said of fever. In about half of the cases in the progressive stage of joint tuberculosis there is an elevation of the afternoon temperature amounting to 0.5° to 1.5° . It is corroborative, but not of diagnostic value.

The use of tuberculin in the diagnosis of joint disease I condemn, believing it to be worthless in safe doses and harmful in diagnostic doses. A really good *x*-ray picture interpreted by one having experience in interpreting *x*-ray pictures is of diagnostic value.

The prognosis as to life is about 90 per cent. good; as to duration, from two to six years with treatment, but much longer without treatment. As to deformity, early cases treated efficiently can usually be cured without deformity; in later cases where deformity has been allowed to develop, the deformity can be made less and sometimes wiped out. The ultimate joint motion depends on the amount of bone destruction and repair, and the duration of the disease. A few cases recover with normal motion; a few with no motion; most cases have some degree of useful motion. The presence or absence of tubercular abscesses does not seem to play much part in the amount of stiffness that ultimately results.

The principles of treatment are:

1. To correct the deformity as rapidly as possible with safety to the patient. This should be done gradually; not rapidly with the patient anesthetized, because forcible correction of the deformity under an anesthetic is followed every now and then by tubercular meningitis and death.

2. Protection from weight bearing when the disease is in the spine or lower limbs by putting the patient in recumbency at least until the deformity is corrected and there is little or no tendency for deformity to again develop.

3. To immobilize the diseased joint by plaster splint, or steel brace, or some mechanical device.

There comes a time, however, during convalescence, when a gradual restoration of some degree of functional activity hastens the cure. The choice between treating tuberculous joints by plaster splints, or steel braces or other mechanical device must rest with the surgeon. He should use the splint or brace as a tool and choose the one that he can use best. But no man should use a steel brace unless he himself can make the measurements, draw the specifications, and fit the brace, even go into the shop and make the brace if necessary. The surgeon who cannot do this himself is not competent to treat a case with a brace.

As to the treatment of tuberculous abscesses, so long as they are tuberculous abscesses, they should be left alone.

DISCUSSION ON SYMPOSIUM ON SURGICAL TUBERCULOSIS

Dr. William Fuller: After hearing such a splendid symposium on tuberculosis as we have listened to to-night, one with moderate experience in such work can, in discussing it, do little more than ask a few questions with the hope that it will serve to bring out by the essayists in closing a little more clearly some of the points touched upon by them when presenting the subject. Aside from this I desire to refer to a few points on tuberculous peritonitis: First, is the error which I think has been made by some writers in their efforts to classify the subject into several forms or varieties. Knowing as we do the histology of tubercle, and the pathology of this disease, it seems needless and unnecessary to recognize more than one form of the disease; let us remember that the different clinical pictures which we see sometimes are merely different stages of a single disease; the progress towards recovery or otherwise of a disease with but one pathologic picture.

Secondly, I believe it a mistake to lay too much stress on the symptoms of this disease. In no way do I deery symptomatology, but believe if we wait till such symptoms as large peritoneal effusions, abdominal tumor masses, loss of weight, etc., appear, that little can be done with any kind of treatment. The symptom so beautifully described by Thomayer, the retraction of the mesentery and the displacing of the intestines to one side of the abdomen, creating thereby unequal tympanitic areas in the abdomen, is pathognomonic of tuberculosis of the peritoneum. But who among us cares to wait till such symptoms as these occur before making a diagnosis. I take it that before any of the symptoms are marked the diagnosis should be made if treatment is to avail much; a diagnosis of non-clinical rather than cliuical tuberculosis.

As to what surgical treatment may do in tuberculous peritonitis I am not in a position to say. I have operated on a few cases that got well; on a few that died. I have treated some expectantly that lived, and others that did not. Whether those that lived after the operation would have done so with other treatment I cannot say; or those dying without operation would have lived if operated on, is also unknown to me. In this connection, however, I wish to ask a question: If such an unlimited disease as tuberculous peritonitis is cured by such a limited amonnt of surgical work as is the operation as generally done for tuberculous peritonitis, is such true in tuberculosis of any other organ or tissue of the body?

Will the admission of sunlight and air into a bone or joint cavity cure tuberculosis there? This alone is believed by some to be the factor responsible for many cures in the operations for tuberculous peritonitis. Why will the mere opening into a focus of tuberculosis in one locality cure the lesion if such a procedure elsewhere will not only fail, but increase to a great extent, the severity of the lesion?

I was pleased to hear Dr. Murphy say that the trend of the times is towards non-surgical treatment. I believe this is correct, but am inclined to feel that in many cases diagnosed early, surgery may eliminate a major portion of the diseased structures and is therefore the best treatment under such circumstances.

Now a word as to tuberculosis of the kidney. The value of nephrectomy in most instances cannot be questioned. In the specimens here presented, the question has been asked if anything short of this would have sufficed. No surgeon could take exception to this plan of treatment in tuberculous kidney disease advanced to the stage of the disease exhibited by these specimens. But let us all remember in the worst of the specimens here shown, that one day this kidney was normal; one day it had in all probability a single focus of disease, limited to one pole, or the distribution of a single arterial branch as some cases are in the beginning and for a long time thereafter. Suppose at that time the diagnosis could have been made, or the kidney operated on for some other condition supposedly, and this localized lesion of tuberculosis bound, what then? Would a nephrectomy be justified? Such cases are found, not often it is true, but when met with should not be treated as are cases with the kidney riddled with tuberculous disease. Resection of a kidney for tuberculosis has a place in the treatment of this disease.

No better evidence is wanted than to call to mind how ureteral and vesical tuberculosis will clear up when the diseased kidney is removed. These organs do not always, of course, undergo a cure with the kidney removed, but that they have undergone such changes thousands of times perhaps, no one can deny. If this is true is it more unreasonable to expect a remaining and major portion of a diseased kidney to regain its normal state after a portion of it has been removed; and further, after many tuberculous kidneys are cured by non-surgical treatment and with no operation at all?

Dr. Harry Kahn: I have been asked to discuss tuberculosis of the ear, nose and throat in connection with this symposium. It is a difficult task to cover the whole field in the time allotted. I will therefore but outline the subject.

Tuberculosis of the upper respiratory tract manifests itself in four forms, namely, as infiltration, ulceration, tumor and perichondritis. These four forms may occur separately or may be variously combined. The lesions may be primary or secondary. The nose is usually attacked at its entrance or on the septum which is very often perforated by the process. Occasionally one finds tuberculous sinusitis. Tuberculosis of the larynx is rarely primary, but generally secondary to tuberculosis of the lungs, and it may be considered a surgical disease and may be attacked surgically if the tuberculosis of the lungs is quiescent or not far advanced, or it may be attacked according to the method of Gottstein by applying the actual cautery to the tuberculous lesion.

The principal point I wish to bring out is the etiologic relation of the parts of the drainage area of the lymphatic glands of the neck to the tubercular infection of these glands. The literature shows two opinions as to the mode of infection. 1. Ascending infection from the secondary tuberculosis of the bronchial and mediastinal glands. Neuman¹ was probably the last to hold the view. 2. Descending infections from some portion of the lymph drainage apparatus, is the now most generally accepted theory. This was recognized as early as 1879 by Cohenheim. To particularize categorically the results of a search the literature may be summed up as follows:

1. Cutaneous lesions of the scalp and face. The tubercular nature of lupus is well established. But few cases are on record secondary to this. A case of Leloir in the *Ann. de dermatol. et syph.*, 1886, p. 332, is the only case that can be referred to.

2. Chronic otorrhea of the tubercular variety may be shown to be the cause in some cases, and in more cases than we are at present aware.

3. Lesions of the mouth and naso-pharynx are seen now and then but the infections of the glands of the neck seldom follow.

4. Dental caries. The importance of carious teeth has been variously estimated. Garre estimates 50 per cent. and Starehy 40 per cent. Conet produced experimental tubercular infection of the teeth of guinea pigs which was followed by tubercular glands of the neck.

5. Tonsils, faucial, pharyngeal and lingual, are also an important source of infection of the glands principally the deep set. Previous to 1884 tuberculosis of the tonsil was supposed not to exist but Strassman² showed this view to be erroneous. And since that time the tonsillar tissue has been considered to be the avenue of infection of at least a portion of the tubercular glands of the neck. Damoscowski³ traces the tubercular virus through the tonsil to the connective tissue lymph vessels between the follicles of the lymph glands that surround the large blood vessels of the neck. And lastly Wood in America and Senes Morehead for the English Tuberculosis Commission, have shown that the tubercle bacillus may pass through the tonsils in the body of a phagocyte and land in the first, but may go to the second or even the third or further down the lines of glands before it establishes itself and infects the gland.

In closing I wish to emphasize 90 per cent. of the tubercular glands in children are due to invasion through the tonsil and that the most dangerous tonsils for

1. Berlin Clinics v. Sehr., 1897, xxxiv, 592.

2. Archiv. 1884, xvi, 319.

3. Beit. z. path. anat. and Allg. Pat., 1891, x, 481.

tubercular infection are the small or buried variety and not the large protruding tonsil.

Dr. Charles M. Jacobs: I believe as Dr. Ridlon does that careful and efficient protective treatment will not only result in a cure of the patient in tuberculous joint disease, but will give a movable joint in the vast majority of cases. After observing the results obtained by surgical procedure, I am more convinced than ever that the best treatment of tuberculous joints is by conservative methods. I do not wish to imply, however, that operative procedure should be abandoned. I believe it to be a useful adjuvant measure, but it should not be the fundamental treatment in children.

In the treatment of tuberculosis of the hip in adult life, excision of the head of the femur assures a rapid cure in early cases and is advisable because the period of disability is of far greater moment than the preservation of motion. But the same operation in a child will involve not only the sacrifice of bone with a crippling deformity in after life, but there is no assurance of a rapid cure. The theory has been advanced that the tubercle bacilli have a special predilection for the red marrow in bone and the synovial membrane in joints. We know that the structure of bone in adults and in children is not the same; that the red marrow is found in the region of the joints in adults, while it is found not only in the region of the joints in children but in the shaft of the long bones as well. Therefore, we can readily understand why an excision of the head of the femur will not insure a rapid cure in children. When we were using bismuth paste so extensively at the Home for Crippled Children some years ago, 40 per cent. of the cases were for tuberculous sinuses resulting from excision of the head of the femur. I should like to hear from Dr. Murphy regarding the theory advanced.

Another important point I wish to emphasize is in reference to the treatment of tuberculous abscesses. It is thought that opening a cold abscess is a good method of treatment, but a difference of opinion exists on this subject. We know that, if abscesses were left alone they would disappear without any treatment, at least in 20 per cent. of the cases, and that this percentage could be increased by the "rest" treatment.

Dr. Ridlon has mentioned tuberculin. At the Home for Crippled Children we selected twenty-four cases of tuberculous joints as much alike as possible. Twelve of them were given tuberculin for nine months, and at the end of that time those patients who had been given tuberculin did not show any greater improvement than those treated without tuberculin.

Dr. William Cuthbertson: Dr. Murphy has drawn and described a most beautiful picture of tuberculosis of the Fallopian tube, that portion of the female genitalia which is most infected by this disease. He also ascribes this infection in many instances to an ascending process. It would seem from the prevalence of tuberculosis of the epididymis that it would naturally follow that the female genitalia would be infected through coitus. The conclusions which Pope has come to from his researches in tuberculosis of the female genitalia, together with the statistics quoted by Dr. Lewis, go to show only a small portion of the cases result from coitus. On the other hand, other investigators have shown that tuberculous endometritis results very often after childbirth and labor, hence we can account for seeing a great many cases which are infected during childbirth or are infected during labor.

Dr. Bevan has spoken of the favorable results of resection of the epididymis in tuberculous epididymitis, and has referred to the similarity between tuberculous epididymitis and tuberculosis of the Fallopian tube.

Dr. Lewis referred to the rarity of involvement of the uterus, the vagina and vulva in the tuberculous process.

The infections of the vulva can be readily treated by the x-ray, by excision and by hygienic treatment. Where the vagina is involved it is much more difficult. Superficial ulcerations can be readily excised, and the patient treated with tuberculin, or given this combined with hygienic treatment; but very often this process goes from bad to worse and results in a fistula forming between the bladder and vagina. Tuberculosis of the Fallopian tube is a very difficult thing to

diagnose. Unless the process is far advanced, or unless it has occurred in markedly tuberculous people, it is not an easy thing to diagnose it. The diagnosis is frequently made after opening the abdomen in women who present no gross evidences of tuberculosis; hence I maintain the same position in regard to tuberculosis of the Fallopian tube that Dr. Bevan does with reference to tuberculous epididymitis, and that is, where we have the abdomen open and we see the Fallopian tube involved, and before any great extension of the tuberculous process has occurred, we should resect that portion which is palpably infected and combine this with hygienic treatment, thus giving the patient the best chance for a permanent recovery.

Stoekels of Marburg goes so far as to say that where there is extensive involvement of the uterus, adnexa, and vagina, the Wertheim operation should be practiced and total removal of all these structures made.

Dr. G. Frank Lydston: Some interesting points have been brought out this evening in connection with the various forms of tuberculosis of the genitourinary tract. One point brought out by Dr. Bevan in particular was exceedingly interesting to me, namely, the use of coli vaccine in addition to tuberculin in the treatment of tuberculosis of the urinary tract.

It is proverbial among genitourinary surgeons that the use of tuberculin is not so promising in this particular field as it is elsewhere. I was considerably puzzled to explain this, and finally, purely by accident, I stumbled on the fact that genitourinary tuberculosis is often complicated by colon bacillus infection. This probably will explain why some of the cases have been so unpromising under the use of tuberculin. I find now, bearing this complicating infection in mind, that by the use of coli vaccine in addition to tuberculin, I get much better results. I have a number of cases under treatment that are doing splendidly.

With reference to the frequency of prostatic tuberculosis, it is rare. I agree with Dr. Bevan that when we can find a case where the tuberculous process is limited, an early operation should be performed, but I do not know exactly how we can make an early diagnosis of such cases. I know of no method of making an early diagnosis in this type of cases. In by far the majority of cases the prostate is involved secondarily to the bladder, and the seminal vesicles are also implicated. Not infrequently the testicle and vas deferens are involved, and I cannot see the sense of operating on a case of that kind. Healing very rarely takes place; a fistula is left. Possibly the only excuse for operation would be drainage. As for complete extirpation of the tuberculous area, I think that is not only impracticable but it is foolish to attempt it.

There are a great many cases of chronic prostatitis in which the prostate feels nodular to the exploring finger in the rectum, and they are passed along as tuberculosis of the prostate. I remember that one of my distinguished confrères in the city some years ago practically said that a nodular condition of the prostate really meant tuberculosis, to which I replied, that if it was tubercular, it was not only very frequent, but was not a very serious condition.

With reference to operating on the tubercular testis, I believe that, inasmuch as the testicle is readily accessible, the tubercular foci in the testis, one or both, should be removed. In early cases in which the diagnosis cannot be established satisfactorily, unless the patient will consent to have the epididymis resected on suspicion, the vas should be resected to cut off the avenue of infection to the seminal vesicles, prostate and bladder.

I believe that gonorrhea bears a distinct relation to tuberculosis of the epididymis. In certain cases apparently the epididymis, which has been involved in a chronic gonorrheal inflammation, becomes involved in a tubercular infection. This may be a mere coincidence, but it has occurred so frequently in my experience that I think it is safe to infer that in some cases the sequence is clear.

With reference to obliteration of the ureter in tuberculosis of the kidney, not only is the ureter obliterated in very many cases, but the blood vessels also. It has been my experience in removing a tubercular kidney, which was far advanced and reduced to a pus sac, to have the entire remnant of the kidney come away, much to my consternation, and to find my concern was absolutely unneces-

sary because no hemorrhage followed. The late Dr. Alexander Hugh Ferguson called attention to several similar cases that had occurred in his own experience, but I do not know whether he called them tubercular or not.

I believe with Dr. Bevan that ascending infection on the opposite side from the tubercular kidney and the tubercular ureteral orifice is rare. It is more likely to occur where injudicious and rough catheterization of the ureters is practiced. With a perfectly normal ureteral orifice on the opposite side, the diagnosis having been established by the presence of tubercle bacilli in the urine, the use of tuberculin and the cystoscope, I can see very few indications for catheterization of the opposite ureter. When, however, it comes to the question of operating on the diseased kidney, catheterization is necessary to differentiate the urines and determine whether the sound kidney or supposedly sound kidney is capable of carrying on the renal function.

With reference to the bladder lesion healing after nephrectomy, when the kidney is removed early, my experience has been that the bladder lesion, unless it is extensive—and it is not extensive as a rule—heals. It would seem that the bladder is relatively insusceptible to tubercular infection as compared with the kidney.

I would like to ask Dr. Bevan whether in his own cases and those of Dr. Schmidt in which the bacilli in the urine persisted after apparent cure of the tuberculosis, the tuberculosis was primary or secondary.

Dr. Bevan: Secondary. I do not believe there is such a thing as primary tuberculosis of the bladder.

Dr. Lydston (resuming): I am glad Dr. Bevan answered the question, because I could not see why he and Dr. Schmidt should be surprised that tubercle bacilli should persist if the cases were secondary.

With reference to the treatment of tuberculosis of the bladder, I agree with Dr. Bevan, who stated that rest is absolutely essential. These cases are very often benefited by suprapubic section and drainage for a prolonged period, and when this is combined with a change of climate and with the ordinary general measures for the treatment of tuberculosis, a palliative operation is very satisfactory, and in some instances apparently a cure results. I have seen that occur.

With reference to operating on the seminal vesicles, I cannot conceive of any reason why the seminal vesicles that are invaded by the tuberculous process should be operated upon. The seminal vesicles have been operated on very much more frequently than they should have been. It is a brilliant thing to have operated on a series of cases of disease of the seminal vesicles, but in the majority of cases such operations are not justifiable. Especially is operation not justifiable in cases of tuberculosis of the seminal vesicles where the prostate and bladder are practically always involved.

With reference to the removal of the testicle in cases in which the organ is broken down, with more or less extensive tubercular abscesses, whether the process be primary or secondary, I believe the removal of the testis is in order. It is astonishing how in some cases pulmonary infiltration will clear up after the removal of the testicle. It is sometimes a difficult thing to determine precisely which is the primary process, the testicular or the pulmonary tuberculosis. I have repeatedly seen pulmonary tuberculosis improve as a consequence of complete removal of the tubercular focus in the testicle. As to whether this was due to improvement in the general condition incidental not only to the removal of the tuberculous focus, but also of a focus of mixed infection, I am not prepared to say, but the sequence of cause and effect has been so frequent in my experience that I feel justified in asserting that the operation should be performed in all cases.

Dr. Isaac A. Abt: In reference to what Dr. Fuller said, it is important to make a clinical differentiation which Dr. Murphy made earlier in the evening of the so-called ulcerative type from the adhesive type, and from the diffuse miliary type, because in the ulcerative type, or in those where there are masses containing tubercular fluid, it is essential to open them to get any results at all.

So far as tuberculosis in children is concerned, we can usually recognize the primary lesion and secondary invasion. In the majority of instances the primary lesion occurs in the lung. It has been found by two observers who have studied a large series of autopsies that in more than 90 per cent. of the cases the lesion is primarily in the lung, and secondly in the glands. They go so far as to say that the primary lesion has occurred in the same lung on the same side where the gland is involved. If there be a primary lesion in the right lung, then one may expect secondary involvement of the mediastinal or bronchial glands on the right side. They make the same point with regard to intestinal involvement. There is a primary lesion of the intestine before there is any involvement of the mesenteric glands.

Dr. William M. Harsha: The papers and discussion have been very illuminating; and have been participated in by men who are well qualified to speak.

I would like to call attention to one point, and that is, how tuberculin is estimated in the various tests for diagnostic purposes. I do not think that point has been referred to, and I should like to hear an expression of opinion from the essayists when they come to make their closing remarks.

As to the treatment of tuberculous troubles in general, it would seem from the discussion here to-night that the trend of opinion is toward the non-operative treatment. It is certainly so in the orthopedic department (of bones and joints), and we have no better treatment in the average case of joint tuberculosis than rest; and speaking of rest, it applies as well to the intestinal, bladder and kidney forms of tuberculosis. It seems like reverting to the principles advocated by Hilton in his notable book, written many years ago, on "Rest and Pain." It shows how we have gone back to that in the way of treatment of various ailments.

In the treatment of joint tuberculosis the Bier method should be emphasized, and immobilization of joints should receive a good deal of attention, but the latter is not made with sufficient thoroughness in most cases.

It has certainly been brought out very clearly this evening that the hygienic and climatic treatment is of the utmost importance in every form of tuberculosis. I believe many cases of kidney tuberculosis will be cured in the same way.

I have under observation at the present time three cases of tuberculosis of the kidney, the disease having existed for ten years or more, and they seem to be free from any symptoms, other than occasionally we find tubercle bacilli in the urine. So that, it seems to me, in many of these forms of genital tuberculosis we may dispense with operation often, excepting in those where we have tuberculosis of the epididymis. I believe those cases should be treated surgically, and also the broken down testicular tubercular abscesses should be thoroughly removed.

As to tuberculosis of the intestine, I think the treatment consists in securing rest for that portion of the intestine which is diseased, where possible by the methods advised here this evening, and the general hygiene and dietetic management.

Dr. Frederick Cleveland Test: I cannot allow the statements that have been made to-night in regard to the usefulness of tuberculin in cases of bone tuberculosis to go unchallenged, because I feel that they are not in accordance with the facts.

Tuberculin has been found to be efficient in other forms of tuberculosis, and it is effective in bone tuberculosis. I think the crux of the matter is simply this, that the proper tuberculin has not been used.

Bone tuberculosis, as I find it principally in children, in 75 per cent. of the cases is of the bovine type, and when treated with bovine tuberculin you will get results.

In the papers of the orthopedic men I have looked over, there seems to be no mention of any attempt at differentiation of the kind of infection present. In other forms of bacterial infection effort is promptly made to determine the identity of the infecting organism, so that proper, specific treatment may be given. You would not treat an erysipelas infection haphazard, with any streptococcus vaccine, as that of *pyogenes* or *conglomeratus*, but would use the vaccine of *longus*, and expect to get results. The same principle applies to tuberculous infec-

tion, though I recognize the fact that some degree of immunization is ordinarily obtained, through treatment with any form of tuberculin. One line of treatment is general, and the other specific, and so, for that reason, when you treat bone tuberculosis with the proper tuberculin, that of the infecting type, you will get the desired results in the larger number of cases.

Mention was made of one series of cases in which tuberculin, type not named, had been given to patients for nine months, and then abandoned as useless. Why, what would be said of the surgeon who put joints up in a plaster cast or used braces for this brief length of time, and then stopped, saying that this was all that could be done for the patient. Patients are entitled to tuberculin treatment not only for nine months, but two, or three or even four times nine months if necessary, and then compare with those who have not had tuberculin, or the proper tuberculin and the greater improvement will speak for itself.

Dr. John B. Murphy (closing the discussion on his part): It seems to me, that in the discussion we have drifted almost entirely to the treatment rather than adhering to the pathologic conditions which are to be treated. It is not so much the tuberculosis *per se* as it is the degree of destruction that has been produced in the organ involved compared with the natural reparative and resisting power of that tissue.

Tuberculous adenitis in adults will go on to repair with appropriate treatment, but it is the degree of destruction which controls the amount of work that has to be done to reconstruct the tissues and develop resistance; therefore, the only way by which we can make an estimate of what is really expected to be accomplished and what can be accomplished is by analyzing the degree of destruction that has taken place.

With reference to the remarks made by Dr. Fuller as to tuberculous peritonitis we may compare the peritoneal destruction to that caused by burns in any part of the body. When we have a burn of the first degree it is possible to secure a full restoration of tissue. We all know that. If we have a burn of the second degree, we have a reparative scar. If we have a burn of the third degree, we have cicatrization, contraction and possibly continued ulceration always with permanent tissue depths. In the repair of tuberculosis in the catarrhal type of peritonitis there is no destruction but a metaplasia of the endothelial cells, which is capable of complete restoration, and one would find in that type, if he reopened the abdomen at the end of six months for some other condition, a perfectly normal peritoneum. Exactly the opposite is true when we have the third degree of destruction. When the endothelial cells have been destroyed we have permanent firm organic adhesions, and when separated the surface must be covered by a peritoneoplasty to prevent adhesions. Another example: if we have a plastic cobweb exudative variety of synovitis, properly handled and treated, we can bring about full restoration; the surface again covers with endothelial cells, and a perfectly movable joint results. It is of the utmost importance in describing a treatment and what one expects to obtain thereby to state definitely whether he has a superficial exudative variety, with the transudation of fluid into the peritoneal cavity to deal with; whether he has the cobweb variety, which has altered the endothelial cells, but not beyond the power of restoration, or whether he has entire destruction of the endothelial cells, and basement membrane where nothing but connective tissue formation and adhesions must finally result. That is the reason for making the differentiation. It is well to keep that clearly in mind in making an estimate of what can and what should be done. If a man says that he can bring about complete restoration in this last named variety, he is stating an untruth, as *restoratio ad integrum* is impossible. It is not within the range of surgery to do so whether you give tuberculin or not. If we administer tuberculin properly in the other varieties, the case goes on to recovery. We have, therefore, three distinct varieties of the same affection. Yes, but not capable of being restored in the same way nor with the same final results.

Concerning Dr. Jacobs' question why tuberculosis occurs in the shafts of bone in children, we start out with the primary statement, that up to the period

of ossification we never have primary tuberculosis in the epiphysis. Why? Because cartilaginous tissues are never primarily attacked by tubercle bacilli. In the adult we never have primary tuberculosis in the shaft; it is always on the joint side of the epiphyseal line. In children we have osseous tuberculosis occurring in the shaft, where the bone is denser; this type demands immediate operation for its relief. A large portion of the shaft, all of its diseased area, should be removed as early as diagnosed. We can take out two, four, six or ten inches of the tibia or femur and by preserving its periosteum have a complete and perfect restoration of these bones, as has been demonstrated by Mr. Stiles of Edinburgh. Where the femur is removed, in order that deviations or shortening may not occur, I transplant a portion of the crest of the patient's tibia sufficiently large to fill up the gap and contact above and below with the retained bony segments. By this means one insures (a) complete restoration, (b) absence of shortening, (c) no change of conformation. When tuberculosis occurs in the knee of a child it is a primary synovial tuberculosis and has an entirely different process in repair.

In considering the degree of potency of serous membrane repairs in tuberculosis, we classify them in the following order: first, the best repair is by the peritoneum; second, by the pleura; third, by the synovial membrane, and fourth, by the meninges. Each of these has its individual potency in the repair of tuberculosis and it is that power of repair that we assist by treatment to restoration, which governs the final result obtained in the cure.

In analyzing tuberculosis of any tissue there is no better means than the one advised by us many years ago, of using as an analogue the destruction and repair of lupus.

Ask the question: if it were a lupus of this tissue, what would happen? It has been shown that tuberculosis is healed by encapsulation or exfoliation. The tuberculous process is either encapsulated, becomes inert, or remains latent for a number of years, and then can break out anew; or it is exfoliated and thrown off from the surface. That is the way lupus heals, and that is the way tuberculosis heals.

Tuberculosis of the uterus is a much more common lesion than is generally supposed. It occurs quite frequently in young women. I have observed this when these patients are referred to me for surgical treatment of menorrhagia. A large percentage of these cases give a positive response to the tuberculin test. Tuberculin treatment is at once instituted and gives us much more satisfactory results than curettement or any other line of treatment with which I am familiar. It is most gratifying to see the quantity of flow diminish, the interval between increase, the gain in weight and physical appearance and in a few months to see the complete recovery. The test dose we use in the average case, not in the severe one, is five minims of dilution number two of Lucius & Bruening's preparation of Koch's old tuberculin. Now we use the hypodermic test exclusively. I have seen ill effects from the ophthalmic test, but not from the other.

If it is bone tuberculosis in a child, which is even much more common than Dr. Jacobs has mentioned, the bovine type of tuberculous vaccine should be used for test and if positive for treatment. Otherwise in all cases of tuberculosis we use human tuberculin, which we have demonstrated has a positive and valuable place in the treatment of tuberculous lesions of bones if properly administered. Furthermore, we believe that there is no agent that can be more abused and cause greater destruction when one thinks he is doing good than tuberculin. We believe that it is more difficult to learn the dosage of this drug than any other agent we have ever used, and it is because of this difficulty, together with the failure to interpret the proper effect of the dose, that such great diversity of opinion has arisen as to its value.

Dr. Arthur Dean Bevan (closing the discussion on his part): With reference to the tuberculin test, I would not give thirty cents for tuberculin as a diagnostic means in determining whether or not a given case is one of surgical tuberculosis. When you realize that von Pirquet, who has worked over the matter so carefully, tells us that 90 per cent. of adults react to his test, and when the evidence shows that 50 per cent. or more of children over 10 react to it, we must realize

that in the tuberculin test we have the possibility of enormous error. I have come to the conclusion that in surgical tuberculosis it is absolutely of no value when you realize in a series of marked cases of tuberculosis you frequently obtain no reaction at all. I am rather inclined to believe that when we weigh the evidence in a given case of surgical tuberculosis, or in a supposed case of surgical tuberculosis, we must not give the tuberculin test much credit, nor rely upon it on determining the diagnosis. I simply make that statement because in my work on surgical tuberculosis I do not use tuberculin as a diagnostic aid. We are convinced that we obtain no assistance from it. I will go a step out of our way and say this also with regard to the Wassermann test, that we have recently operated on a number of cases where the Wassermann test was misleading, two cases of brain tumor, with absolute positive Wassermans. These patients were operated on at the urgent request of the neurologist, and the operation disclosed no syphilis but in one case a glioma, and in the other an endothelioma. We have comparatively recently had five cases of carcinoma of the mouth and tongue, with very positive Wassermans. These patients had been given salvarsan, K.I., and mercury hypodermatically for long periods of time, and a section taken in a minute with a little cocain or novocain and put under the microscope showed unmistakable epithelioma.

There is one thing you have got to do in practicing medicine, and that is to get down to absolute facts. As clinicians we often attach too much value and place too much importance on some laboratory tests, and in saying this I do not wish to be understood as decrying laboratory tests nor laboratory work, because I have a laboratory of my own, and it is most instructive, but when you come down to the clinical facts of surgical tuberculosis, do not rely too much on the tuberculin test. When it comes down to supposed syphilis, do not rely too much on the Wassermann test.

Dr. Lydston: I would like to know by what process of reasoning you conclude, Dr. Bevan, that glioma of the brain or epithelioma of the tongue insures the patient against not having syphilis, although the Wassermann test is positive.

Dr. Bevan: The problem put before us was to determine in each one of the cases whether or not we had to deal with a syphilitic or some other lesion. In the two cases of tumor of the brain the patients had been handled very freely with salvarsan, were given K. I. and mercury, and after the Wassermann test was made it was suggested to crowd the K. I. again to the limit, relying upon the Wassermann test. The neurological consultant believed in spite of the positive Wassermann that operations should be done, and they were done, and showed not syphilis but tumor.

One of the tongue cases was very pitiful. The woman denied absolutely that she had ever had syphilis; her husband denied syphilis; she had borne healthy children, and her husband denied having intercourse with anybody except his wife. A Wassermann test was made and was positive, and for three or four months in spite of her protests and mental suffering she was put on K. I., on mercury, and salvarsan, and during all that time the process extended. She died of carcinoma of the tongue, even after operation was made, from a rapid recurrence. In determining what the surgical lesion really is in a given case, I do not think we should rely too much either on the Wassermann test or an tuberculin.

Dr. Henry F. Lewis (closing the discussion): There was one point brought out by Dr. Murphy in connection with tuberculosis of the uterus which I did not clearly understand. I would like to know whether in these cases of menorrhagia in young women or almost children the diagnosis of tuberculosis was made absolutely or simply suspected?

Dr. Murphy: Suspected.

Dr. Lewis: The diagnosis was not made by finding tubercle bacilli?

Dr. Murphy: No.

Dr. Lewis: The menstrual function is an extremely complicated one and is influenced by nervous troubles, and we have also known for a long time that one of the early symptoms of tuberculosis of the lungs is menorrhagia. Therefore we cannot conclude that, because menorrhagia ceased under tuberculin treatment, the tuberculosis was necessarily in the uterus.

A STUDY OF THE MORTALITY OF APPENDICITIS *

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While the literature on appendicitis is almost endless and while I have nothing new to present in diagnosis or treatment, yet an investigation of the mortality of appendicitis warrants the adding of my name to the already long list of contributors to this subject, with the hope that it may convert a few to deeper thinking and the application of more care in diagnosis.

In my investigation of reports covering 20,670 deaths (including simple peritonitis because of the fallacy of this diagnosis) as shown in the accompanying table, there were 11,144 due to appendicitis and 9,526 in which simple peritonitis was given as the cause of death.

In 5,167 deaths due to appendicitis in which the sex was given, 3,081 were males and 2,086 females, or 59.62 per cent. and 40.38 per cent., respectively. Of 5,389 cases of simple peritonitis there were 2,260 males and 3,129 females, or 41.93 per cent., as compared to 58.07 per cent. in females, or a reverse in percentages.

In 5,284 cases of appendicitis the ages were as follows:

1- 5.... 193	20-30....1,092	50-60....367
5-10.... 457	30-40.... 750	60-70....224
10-20....1,454	40-50.... 590	70 +....157

While the above figures show appendicitis to be a disease of all ages, yet it proves conclusively that a very large percentage occurs during young active life and also warns us of the frequency of appendicitis in children.

In 5,227 cases of simple peritonitis in which the ages were given, it was found to be as follows:

1- 5....574	20-30....959	50-60....520
5-10....299	30-40....901	60-70....403
10-20....589	40-50....624	70 +....358

In these the age was found to coincide very closely to that of appendicitis, except in early life. Over fifty per cent. having occurred during the period of life in which the female productive organs are most active, a statement can be made with little hesitation that the cause of death in many of these cases resulted from an infection of the appendix in the male and in the female either as an appendiceal or tubal involvement, owing to frequency of ascending infection in the latter sex.

Another feature of this investigation worthy of one's notice is the city death rate of these conditions as compared to the rural districts. In the city of Boston only 680 deaths of appendicitis occurred during a

* Read before the Chicago Medical Society, Dec. 6, 1911.

Cause	Year	State	City	Sex	Age																	Deaths, Cause	Deaths, All Causes	Population State
					Age																			
					1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80			
Appendicitis	1900	Mass.	Boston., 670,585	M.	168	1	13	14	29	47	27	17	13	5	2	243	51,156	2,805,346						
Simple peritonitis..	1900	Mass.	..	F.	75	2	9	11	11	8	11	9	7	3	4	541	51,156	2,805,346						
Appendicitis	1901	Mass.	Boston.,	F.	319	26	13	11	14	88	80	28	21	22	16	234	48,275	2,805,346						
Simple peritonitis..	1901	Mass.	..	F.	91	4	10	13	10	18	13	9	5	5	4	537	48,275	2,805,346						
Appendicitis	1902	Mass.	Boston.,	F.	316	33	23	11	10	58	54	43	34	26	24	242	47,491	2,805,346						
Simple peritonitis..	1902	Mass.	..	F.	164	25	14	11	8	23	23	20	14	15	11	439	47,491	2,805,346						
Appendicitis	1903	Mass.	Boston.,	F.	275	20	15	10	9	54	55	33	25	29	25	248	49,054	2,805,346						
Simple peritonitis..	1903	Mass.	..	F.	87	4	14	13	7	16	16	6	2	4	5	453	49,054	2,805,346						
Appendicitis	1904	Mass.	Boston.,	F.	258	18	11	7	14	59	53	33	18	25	20	243	48,482	2,805,346						
Simple peritonitis..	1904	Mass.	..	F.	144	9	9	16	22	35	16	22	6	3	6	420	48,482	2,805,346						
Appendicitis	1905	Mass.	Boston.,	F.	99	1	9	13	14	17	14	14	9	5	3	264	50,486	3,003,680						
Simple peritonitis..	1905	Mass.	..	F.	180	27	11	10	19	17	24	22	21	17	12	446	50,486	3,003,680						
Appendicitis	1906	Mass.	Boston.,	F.	240	12	10	10	10	52	56	42	14	22	12	248	50,624	3,003,680						
Simple peritonitis..	1906	Mass.	..	F.	157	3	12	17	21	31	24	26	10	9	4	358	50,624	3,003,680						
Appendicitis	1907	Mass.	Boston.,	F.	107	4	16	13	11	16	11	13	14	4	5	254	54,234	3,003,680						
Simple peritonitis..	1907	Mass.	..	F.	184	34	17	11	4	22	22	21	12	16	7	45	54,234	3,003,680						
Appendicitis	1908	Mass.	Boston.,	F.	262	18	16	6	17	57	64	30	14	21	19	254	51,788	3,003,680						
Simple peritonitis..	1908	Mass.	..	F.	139	3	10	13	17	24	15	22	12	16	7	400	51,788	3,003,680						
Appendicitis	1909	Mass.	Boston.,	F.	109	3	10	14	13	19	13	19	8	7	3	2,192	451,590	36,041,450						
Simple peritonitis..	1909	Mass.	..	F.	162	23	14	10	9	30	24	16	17	9	10	4,007	451,590	36,041,450						
Appendicitis	1910	Mass.	Boston.,	F.	196	22	10	3	10	42	37	29	21	15	7	35	451,590	36,041,450						
Simple peritonitis..	1910	Mass.	..	F.	148	5	13	10	19	23	34	14	15	11	4	3,003,680	451,590	36,041,450						
Appendicitis	1911	Mass.	Boston.,	F.	106	6	10	10	17	12	15	15	10	4	7	3,003,680	451,590	36,041,450						
Simple peritonitis..	1911	Mass.	..	F.	191	40	10	18	13	21	26	18	18	14	13	3,003,680	451,590	36,041,450						
Appendicitis	1912	Mass.	Boston.,	F.	222	12	11	8	12	54	40	25	20	11	16	3,003,680	451,590	36,041,450						
Simple peritonitis..	1912	Mass.	..	F.	125	7	5	6	19	29	15	18	17	8	1	3,003,680	451,590	36,041,450						
Appendicitis	1913	Mass.	Boston.,	F.	91	3	12	9	10	15	17	12	7	4	2	3,003,680	451,590	36,041,450						
Simple peritonitis..	1913	Mass.	..	F.	181	33	12	9	21	21	27	21	17	13	7	3,003,680	451,590	36,041,450						
Appendicitis	1914	Mass.	Boston.,	F.	219	19	16	10	10	45	37	29	27	12	14	3,003,680	451,590	36,041,450						
Simple peritonitis..	1914	Mass.	..	F.	16	10	10	10	10	45	37	29	27	12	14	3,003,680	451,590	36,041,450						
Total appendicitis	9 yrs.	Mass.	Boston., 680	M.	1,322	39	93	127	187	296	297	170	103	68	35	2,192	451,590	36,041,450						
Total peritonitis..	9 yrs.	Mass.	..	F.	870	29	102	165	143	143	123	107	76	42	36	4,007	451,590	36,041,450						

Cause	Year	State	City	Sex	Age												Deaths, Spec. Cause	Deaths, All Causes	Population State
					1/5	5/10	10/15	15/20	20/30	30/40	40/50	50/60	60/70	70/+					
Appendicitis.....	1902	N. H.	Concord. 0	M.	18	1	3	8	3	1	1	1	1	...	28	6,649	411,588		
Simple peritonitis..	1902	N. H.	Concord. 1	F.	10 23	...	3	2	3	3	1	...	1	...	54	6,649	411,588		
Appendicitis.....	1903	N. H.	Concord. 1	F. M.	31 10	...	1	3	8	4	6	...	2	1	21	6,969	411,588		
Simple peritonitis..	1903	N. H.	Concord. 0	F. M.	11 24	1	1	3	1	...	2	1	...	...	79	6,969	411,588
Appendicitis.....	1904	N. H.	Concord. 0	F. M.	18 19	1	5	3	4	3	...	...	1	...	29	6,804	411,588
Simple peritonitis..	1904	N. H.	Concord. 3	F. M.	45 13	3	...	1	3	9	8	4	7	2	64	6,804	411,588		
Appendicitis	1905	N. H.	Concord. 2	F. M.	6 34	...	1	...	...	...	1	...	...	1	19	7,339	411,588
Simple peritonitis..	1905	N. H.	Concord. 1	F. M.	48 20	2	2	2	8	5	6	1	1	2	82	7,339	411,588		
Appendicitis	1906	N. H.	Concord. 3	F. M.	14 30	2	2	4	3	1	...	...	2	...	34	7,498	411,588
Simple peritonitis..	1906	N. H.	Concord. 1	F. M.	50 22	2	...	4	1	2	10	11	5	7	80	7,498	411,588		
Appendicitis	1907	N. H.	Concord. 0	F. M.	8 31	...	1	1	3	1	1	...	...	...	30	7,486	411,588
Simple peritonitis..	1907	N. H.	Concord. 4	F.	35	2	2	1	1	7	10	4	...	4	66	7,486	411,588		
Total appendicitis	6 yrs.	N. H.	Concord. 6	M.	94	2	5	9	18	20	12	9	3	9	7				
Total peritonitis..	6 yrs.	N. H.	Concord. 10	F.	67 162 263	6 16 13	6 5 10	11 11 13	14 10 13	12 19 38	7 21 55	3 18 36	3 27 29	4 16 27	1 19 29	42,745	2,469,528		

Cause	Year	State	City	Sex	Age											Deaths, Spec. Cause	Deaths, All Causes	Population State
					Age													
					1/5	5/10	10/15	15/20	20/30	30/40	40/50	50/60	60/70	70/+				
Appendicitis	1904	Conn.	98,915 Hartford	M. F.	45 30	5	2	26	20	13	11	4	2	1	1	85	15,711	973,177
Simple peritonitis..	1904	Conn.	16 Hartford	M.	30	11	3	9	12	16	11	13	7	1	0	83	15,711	973,177
Appendicitis	1905	Conn.	11 Hartford	F.	53 75	4	10	31	24	24	11	6	6	3	0	119	16,298	1,005,854
Simple peritonitis..	1905	Conn.	24 Hartford	F.	44 25	12	5	12	13	7	4	2	12	1	1	69	16,298	1,005,854
Appendicitis	1906	Conn.	10 Hartford	F.	44 65	4	14	29	23	17	7	10	5	1	0	110	16,776	1,005,854
Simple peritonitis..	1906	Conn.	15 Hartford	F.	45 21	10	2	7	9	10	6	5	6	3	0	58	16,776	1,005,854
Appendicitis	1907	Conn.	4 Hartford	F.	37 62	2	10	20	12	15	20	9	5	3	...	96	17,490	1,005,854
Simple peritonitis..	1907	Conn.	22 Hartford	F.	34 22	6	2	6	7	4	10	10	2	4	2	53	17,490	1,005,854
Appendicitis	1908	Conn.	6 Hartford	F.	31 49	1	7	18	19	14	12	7	4	1	...	84	16,000	1,005,854
Simple peritonitis..	1908	Conn.	9 Hartford	F.	35 10	2	2	7	2	3	5	4	3	2	2	32	16,000	1,005,854
Total appendicitis	5 yrs.	Conn.	4 Hartford	F.	22	16	43	124	98	83	61	36	22	9	1	494	82,275	4,996,593
Total peritonitis..	5 yrs.	Conn.	86 Hartford	F.	198	41	14	41	43	40	36	34	30	11	5	295		
Appendicitis	1907	Illinois	248,283 Chicago.	M.	296	26	49	74	69	139	79	60	42	19	11	568	62,854	5,519,279
Simple peritonitis..	1907	Illinois	330 Chicago.	F.	78	15	9	9	13	38	28	19	14	9	11	175	62,854	5,519,279
Appendicitis	1908	Illinois	39 Chicago.	F.	97	26	52	75	83	117	98	75	39	19	12	596	60,445	5,608,304
Simple peritonitis..	1908	Illinois	363 Chicago.	F.	265	15	13	13	14	30	35	25	19	11	22	197	60,445	5,608,304

Cause	Year	State	City	Sex	Age											Deaths, Spec. Cause	Deaths, All Causes	Population State
					1/5	5/10	10/15	15/20	20/30	30/40	40/50	50/60	60/70	70/+				
Appendicitis	2 yrs.	Illinois	Chicago, 693	M.	52	101	149	152	256	177	135	81	38	23	1,164	123,299	11,127,583	
Simple peritonitis..	2 yrs.	Illinois	Chicago, 60	F.	30	22	22	27	68	63	44	33	20	33	372			
Appendicitis	1899	Maine	..	M.	0	3	15		8	2	1	1	4	3	37	.....	.....
			..	F.														
Appendicitis	1900	Maine	..	M.	2	5	10		9	9	6	0	1	4	46	.....	.....
			..	F.														
Appendicitis	1901	Maine	..	M.	0	5	10		7	2	1	5	4	5	39	.....	.....
			..	F.														
Appendicitis	1902	Maine	..	M.	1	7	16		14	8	9	4	2	1	62	.....	.....
			..	F.														
Appendicitis	1903	Maine	..	M.	5	13	22		15	11	4	1	4	4	79	.....	.....
			..	F.														
Appendicitis	1904	Maine	..	M.	7	4	24		9	9	12	8	5	3	81	.....	.....
			..	F.														
Appendicitis	1905	Maine	..	M.	5	5	19		16	7	6	5	3	2	68	.....	.....
			..	F.														
Appendicitis	1906	Maine	..	M.	6	6	26		11	8	4	7	5	2	75	.....	.....
			..	F.														
Appendicitis	1907	Maine	..	M.	3	4	26		9	6	10	6	2	5	71	.....	.....
			..	F.														
Appendicitis	1908	Maine	..	M.	3	7	16		8	6	5	4	2	5	56	.....	.....
			..	F.														
Appendicitis	99-08	Maine	..	M.	32	59	184		106	68	58	41	32	34	614	.....	.....
			..	F.														
Appendicitis	1905	Colo.	..	M.	1	13	32		38	18	19	2	3	4	130	9,079	602,925	
Simple peritonitis..	1905	Colo.	..	F.	4	4	9		13	12	9	5	2	2	60	9,079	602,925	
Appendicitis	1906	Colo.	..	M.	5	11	32		25	22	13	8	7	4	124	9,805	615,570	
Simple peritonitis..	1906	Colo.	..	F.	7	0	7		9	13	8	7	7	4	65	9,805	615,570	
Appendicitis	1907	Colo.	..	M.	0	6	27		33	15	10	6	1	1	100	11,093	628,616	
Simple peritonitis..	1907	Colo.	..	F.	4	3	4		9	8	5	5	2	2	40	11,093	628,616	
Appendicitis	1908	Colo.	..	M.	5	6	31		21	16	17	6	5	4	111	10,911	640,861	
Simple peritonitis..	1908	Colo.	..	F.	4	0	4		5	6	5	3	1	1	29	10,911	640,861	
Appendicitis	05-08	Colo.	..	M.	11	36	122		117	71	59	23	12	14	465	40,888	2,487,972	
Simple peritonitis..	05-08	Colo.	..	F.	19	7	24		36	39	31	18	13	7	194	40,888	2,487,972	

Cause	Year	State	City	Sex		Age											Deaths, Cause Spec.	Deaths, All Causes	Population State
						1/5	5/10	10/15	15/20	20/30	30/40	40/50	50/60	60/70	70/+				
Appendicitis	1907	Cal.	..	M.	165	8	41				183			5	0	237	31,095	2,001,193	
Simple peritonitis..	1907	Cal.	..	F. M.	72 85	8	15				128			25	0	171	31,095	2,001,193	
Appendicitis	1903	Rural Md.	Baltimore	F. M.	86 14	0	2	4	1	4	3	3	1	1	1	20	.....	.....	.....
Appendicitis	1904	Rural Md.	Baltimore	F. M.	6 21	2	3	3	8	5	3	2	1	1	0	28	.....	.....	.....
Appendicitis	1905	Rural Md.	Baltimore	F. M.	7 11	2	0	1	2	4	3	1	3	1	1	18	.....	.....	.....
Appendicitis	1906	Rural Md.	Baltimore	F. M.	7 21	1	3	8	5	7	4	0	2	3	0	33	.....	.....	.....
Appendicitis	1907	Rural Md.	Baltimore	F. M.	12 17	0	3	5	3	5	3	3	3	2	0	27	.....	.....	.....
Appendicitis	1908	Rural Md.	Baltimore	F. M.	10 23	1	1	1	9	5	7	4	5	2	4	39	.....	.....	.....
Appendicitis	03-08	Rural Md.	Baltimore	M.	107	6	12	22	28	30	23	13	15	10	6	165	.....	.....	.....
Appendicitis	1908	Oregon	..	F. M.	58 33	4	7		5		12		5		0	51	4,970	.....	.....
Simple peritonitis..	1908	Oregon	..	F. M.	18 16	0	3	3	5	2	7	7	2	1	4	53	4,970	.....	.....
Appendicitis	1906	Ia.	..	F.	37	2	6		4		20		3		2				
Simple peritonitis..	1906	Ia.	..	M.	29											47	6,819	341,000	
Appendicitis	1907	Ia.	..	F. M.	18 10											29	6,819	341,000	
Simple peritonitis..	1907	Ia.	..	F. M.	19 26											42	7,633	341,000	
Appendicitis	1907	Ia.	..	F. M.	16 17											37	7,633	341,000	
Simple peritonitis..	06-07	Ia.	..	F. M.	20 55											89	14,452	682,000	
Appendicitis	06-07	Ia.	..	F. M.	34 27											66	14,452	682,000	
Simple peritonitis..	06-07	Ia.	..	F.	39														

period of nine years as compared to 1,510 in the rural districts and other smaller cities. Concord, N. H., only six deaths in six years, to 155 in other cities and rural districts. Hartford, Conn., eighty-six deaths in five years to 408 deaths outside of that city. In Chicago 693 deaths in two years to 467 deaths outside of Chicago. On the other hand, where peritonitis was given as a cause, only ten deaths occurred in Concord in six years compared to 415 deaths outside of that city. In Hartford thirty-five deaths in five years to 260 deaths in other cities and rural districts of Connecticut. In Chicago and Cook County sixty deaths in two years to 312 deaths outside of Cook County, while the number of deaths in Chicago of appendicitis was approximately 60 per cent. of the total death rate of appendicitis of the state; on the other hand, only 16 per cent. of the reported cases of peritonitis occurred in Cook County.

This contrast of facts may be explained in many ways, chiefly that a very large percentage of cases of appendicitis are taken to the city for operation, many of them in a critical condition as a result of the starvation treatment, for a last resort operation.

While, on the other hand, many cases are not recognized even at the last expiring breath, and go to their graves with the epitaph "died of simple peritonitis," for the want of a better diagnosis.

With the above report of my investigation, which is indeed a serious state of affairs, a discussion of the diagnosis and treatment may be considered at this juncture.

The diagnosis of appendicitis in the great majority of cases is comparatively easy; the fact, however, that some cases offer great difficulty, requires taking into consideration all conditions that may cause confusion and arrive at the diagnosis by exclusion to avoid serious mistakes. A clear picture of the following condition must be kept constantly before us: gastric or duodenal ulcer, ptomain poisoning, or acute gastritis, cholecystitis and cholelithiasis, renal calculus, tubercular kidney, floating kidney, plumbism, intestinal obstruction, tubo-ovarian infections, tubal pregnancy and typhoid fever.

Too much stress cannot be emphasized in taking the history of every case; when properly elicited, if the patient be of moderate intelligence, much valuable information can be obtained that will assist us in arriving at a proper conclusion.

The time, manner of onset, the location, character and radiation of pain, presence or absence of vomiting and its character if present, and does it cease when the stomach is empty, presence or absence of a chill, have similar attacks occurred before, are some of the conditions that should be obtained with every history.

Chill in appendicitis is quite common and a symptom of considerable importance. The pulse and temperature should be carefully noted, and I wish to emphasize the not infrequent subnormal temperature in the very beginning of the attack. The pulse is one of our best guides and should be constantly observed as only a slight increase may mean much. With event of peritonitis we get a more marked increase of the pulse rate, first

full and bounding, later becoming soft and wiry, with a quick receding tension, while the temperature may be subnormal or only slightly elevated.

The pain of appendicitis not infrequently begins in the epigastrium, radiating over the entire abdomen, and is greatly relieved for a short time as soon as the stomach is emptied of its contents, which generally occurs with little effort on the part of the patient; and when once emptied, the vomiting generally ceases. After the stomach has been relieved of its contents we find our pain in the right iliac region in most cases. A sudden disappearance of the pain indicates rupture, thrombosis, gangrene, extension of a localized peritonitis, or rupture of an appendiceal abscess, all of which are extremely grave conditions.

Palpation should be made with the greatest gentleness and care to obtain the best results, as it is by this valuable method we secure our greatest knowledge.

After the abdomen has been carefully outlined and we have located every point of tenderness with the aid of our patient, we should repeat and repeat the same procedure, while at the same time divert the patient's attention through conversation or other means. Superficial and deep palpation should be used, and if need be submerged palpation may be made use of.

The attitude of the patient is of extreme importance. The right limb is not infrequently flexed and should an abscess be formed, or peritonitis lighted up, extension of the limb invariably increases the pain. Tenderness and rigidity over the appendix, limited in their area, are valuable signs in arriving at the diagnosis.

Dr. Morris calls attention to the valuable sign "hypersensitiveness, especially in chronic cases, on deep pressure at the site of the right group of lumbar ganglia situated 4 cm. to the right of the umbilicus, and its importance in distinguishing between appendicitis and diseases of the uterus and adnexa, because in the latter group we expect to find it bilateral." I have found this point of value and demonstrated its correctness.

Thickening and tumor formation about the appendix can often be obtained. Vaginal and rectal examination are of the utmost importance in ruling out tubal and ovarian infections.

Percussion will be found useful if an abscess has formed or obstruction be more or less complete, as it is not infrequent to find a decided tympanic note in the region of the ileum, which is transformed to a dull note abruptly in the region of the appendix and cecum. A gurgling sound may also be obtained with the above conditions present. Leukocytosis is of considerable importance in determining the condition present; however, we must not forget that the leukocytosis varies according to the resistance or immunity of the particular patient in question, plus the length of time the infection has existed and its virulence. Hence the possibility of a given patient being overwhelmed by the virulence of the infection before the resistance of the individual can fortify himself.

In gastric or duodenal ulcer we frequently find our patient a female between 20 and 30 years of age, with probably a history of chlorosis,

amenorrhea, or some occupation predisposing to this condition. Symptoms of dyspepsia are complained of, eructations are frequent and pain in the epigastrium of the sharp burning character excited by taking food and relieved by vomiting. In case of duodenal ulcer the pain may occur later. Tender points not larger than a quarter just below the ensiform cartilage anteriorly, and at the tenth dorsal vertebra to the left of the spinal column are very significant. Hematemesis of unaltered blood occurs in about 50 per cent. of the cases and is said to be pathognomonic.

Some or all of the above conditions being elicited, associated with the characteristic gastric findings of hyperchlorhydria, etc., combined with a history of recurrent attacks form a picture that cannot be mistaken for any other condition. Ptomain poisoning not infrequently causes considerable confusion with appendicitis, and we should be very cautious in taking the history of the previous diet, including the serving of can preparations or tainted foods. The attack usually comes on within a few hours after eating and is ushered in with epigastric pain, cramplike in character, radiating in all directions; repeated vomiting, uncontrollable diarrhea of very dark, offensive stools; restlessness, not infrequently high temperature, twitching or convulsions in younger children associated with muscular weakness, prostration, sunken eyes and pinched expression.

In infections of the gall-bladder a history of malaria, typhoid fever, amebic dysentery or some infection of the gastro-intestinal tract can usually be obtained. It is not frequent under 40, more common in fleshy female subjects with a history of a previous pregnancy or pregnancies in 90 per cent. of the cases. The attack usually comes on suddenly, especially after indiscretion in diet, with severe pain in the epigastrium and right hypochondriac region, not infrequently radiating toward the back and right shoulder; however, the pain may be found in the region of the appendix. The pain is almost invariably followed by vomiting, which has a greater tendency to recur than in appendicitis, and the contents are always strongly bile-stained and of extremely bitter taste. The patient rolls about in great agony and makes pressure over the epigastrium, while the perspiration flows freely.

Jaundice may develop, although slight in most conditions except in obstruction of the common duct, and should be carefully sought. The temperature usually rises, but is not found in the proper ratio with the pulse, as nearly all like conditions of the liver are associated with a comparatively slow pulse.

Constipation is usually present and on examination of the stools one usually finds them lighter in color, while on the other hand the urine is very dark and contains large amounts of bile. Chills are quite common in gall-bladder diseases as in appendicitis. On palpation the abdomen is distended and rigid. Beginning palpation on the lower right side of the abdomen and gently palpating upward we find the rigidity and tenderness gradually increasing and reaching the maximum at the costal cartilage. The liver is found enlarged and tender, and not infrequently the enlarged and tender gall-bladder can be palpated. Sudden cessation of the attack and a history of recurrence are quite characteristic.

Leukocytosis is not marked except in suppurative cases. The ordinary picture of kidney stone or floating kidney is renal colic, which is of sudden onset, with severe pain in the region of the kidney or just below, and radiating downward along the ureter to the genitalia or inner side of the thigh.

Tenderness of the kidney on pressure is a valuable sign and not infrequently with tuberculosis we find some enlargement. A careful history of the onset, duration and the finding of previous attacks is of importance in arriving at a proper conclusion.

To bear out the common occurrence of mistakes I quote Dr. Bevan as reporting four cases of interval operations for appendicitis on the strength of diagnosis made by competent men. Elimination of kidney affections must be done largely from the urinary findings. Oliguria is present in these conditions in most cases associated with vesical tenesmus. Hematuria is one of the most reliable symptoms obtainable, especially if associated with supposed renal colic. The quantity of blood varies greatly from a few corpuscles found microscopically in a well-centrifuged specimen, to macroscopic appearance. Finding of fragments of calculi, pus, kidney epithelium, albumin and tubercle bacilli are of extreme importance. In floating kidney palpation reveals the freely movable organ and absence of tenderness, while a tubercular kidney is usually fixed, enlarged and tender. In obscure cases the *x-ray* combined with segregation and catheterization of the ureter will clear the diagnosis beyond doubt.

Plumbism or saturnism may simulate appendicitis very closely; however, a careful history should be obtained bearing especially on occupation, as our patient may be a metal worker, bartender or painter. The colic is usually severe, the pain is diffuse, cramplike in character, of increasing severity at the umbilicus, and is relieved by deep pressure. Vomiting is frequently present associated with constipation. Temperature is not elevated, and tremor with loss of muscular power, especially of the extensors, is not uncommon. Encephalopathy may occur. Rapid developing anemia is frequent. The blue line of the gums is of considerable diagnostic importance. But a simple measure of no small value is the painting of the skin with a solution of an alkaline sulphid, which will immediately turn black or gray when coming in contact with the lead that is being eliminated by the skin. This is of the utmost importance because it may be obtained early, even before the common manifestations of the disease.

The potential influence of the symptoms of intestinal obstruction are soon stamped on the features of the patient. The history of an inflammatory condition, the presence of a possibly strangulated hernia, or of a previous operation, associated with a sudden seizure of abdominal pain referred to the region of the inflammatory condition should be aids. The pulse becomes rapid and weak, patient cold and clammy with not infrequently a subnormal temperature.

The abdomen is somewhat flaccid while the tympanitic note ends abruptly; gurgling may be obtained, while constipation is absolute. Vomiting is like that of appendicitis, but soon becomes forceful, containing bile and later fecal matter associated with rapidly developing exhaustion,

giving us a clear picture of obstruction; however, it may be due to appendicitis, and should receive the same treatment.

The use of the stomach-tube may be a valuable aid. There are probably no lesions of the abdominal cavity more difficult to rule out in making a positive diagnosis of appendicitis than those occurring in the pelvic organs.

Here a careful history is of the utmost importance in obtaining the possibility of a gonorrheal infection, puerperal infection, abortion, or the early symptoms of gestation, bearing in mind extra-uterine pregnancy. Knowledge of one or more of the above conditions associated with lower abdominal pain, especially on the right side, calls for a differential diagnosis.

The pain in pelvic lesions is usually more continuous, but not so severe excepting that of extra-uterine pregnancy, which is usually sudden and sharp in character. Vomiting is not frequent in these conditions. The not infrequent bilateral condition, the hyperesthesia spoken of by Morris, the tenderness and rigidity determined by double palpation of the appendiceal and tubal regions, the presence oftentimes of a mass in the pelvis, associated with tenderness and rigidity of the vaginal vault, and should we suspect tubal pregnancy, the early symptoms of gestation, sudden collapse, rapid thready pulse, cold, clammy condition of the patient, subnormal temperature, marked pallor from loss of blood, uterine hemorrhage, and absence of leukocytosis with the presence of a mass in the pelvis are findings that will aid us in arriving at a proper conclusion.

Typhoid fever of abrupt onset may call for a differential diagnosis; however, the pain, tenderness and rigidity are not usually so marked, while vomiting is usually absent. The frequency of epistaxis, the dicrotic pulse, headache, enlarged spleen, diarrhea, and the absence of leukocytosis with aid of the diazo reaction, Widal and blood culture, should enable us to make a diagnosis.

While occasionally other conditions may arise to cause confusion, I believe if one keeps a clear picture of the above-mentioned maladies clearly in mind that much fewer mistakes will occur.

Having arrived at a proper diagnosis the question naturally arises, When shall we operate?

Clinical experience teaches us that the symptoms of appendicitis offer no definite clue to the favorable or unfavorable outcome of a given attack, and no history, no matter how favorable, should induce us to recommend medical or expectant treatment. The course of an extensive abscess or gangrene of the ileum through thrombosis of the cecal branches of the superior mesenteric vessels may occur with insignificant pain.

The course being so variable and the symptoms so deceiving, how can we hope to be able to divide the cases into twenty-four, thirty-six or forty-eight hour periods, and conclude rationally that a case is favorable to operation because it is within a certain time limit, and another case should not be operated on because the patient has been sick over a definite number of hours?

The pathology may be extremely grave within twelve hours of the onset or it may be favorable to immediate recovery after a much longer period. I fully agree that the mortality is increased if the infection is beyond the appendix, or if peritonitis is present; but why let the infection get beyond that organ or peritonitis develop, if we appear on the scene before that time, and if not, stop it as soon as we do appear. If we were called to see a case of diphtheria we would not refuse to give antitoxin just because the most favorable time for its administration had passed.

If an abscess has occurred we know that the restrained, increasing pus is under tension and must of necessity travel the way of least resistance. We also know that this direction is not a favorable one. Hence, if drainage is established and the nidus of infection removed, the patient's opportunity for recovery is increased.

We know that acute appendicitis terminates fatally in a large per cent. of cases, and until we have more positive means of determining the condition of the appendix before operation, it is impossible to predict the outcome. Knowing the uncertainty, and if favorable the tendency to recur, the treatment is simple. Removal at once.

I wish to emphasize my position as being in accord with Dr. Holmes (and many others of the same opinion) when he said "there is no condition, from the time that the disease is relatively and exclusively diagnosed to the last expiring breath of the patient, in which an immediate operation is not indicated. The only exception to this rule which has ever been sustained by a grain of argument is that of refraining when the patient is moribund. Theoretically this can be granted, but who is wise enough to say when a patient is ripe for dissolution? The physician or surgeon has no right to fear for anything except his own mental integrity and he should never be afraid to proceed with a rational treatment, however much its results might tend to his confusion, provided it affords one single hope for the life and health of his patient. Every operator has unexpectedly found conditions which seem to preclude the possibility of recovery and yet after the removal of the primary focus of infection and drainage of the abdomen marvelous recoveries have taken place."

The truth of the last clause alone should be the means of bringing every conscientious physician or surgeon within the realms of safety. *I believe there is only one solution to the problem of reducing the mortality of appendicitis, and that is better diagnosis, and harmony among the physicians and surgeons that an immediate operation is not only always indicated, but imperative.*

In the treatment there can be no dispute as to the superiority of the muscle-splitting incision well to the outside of the abdomen, which enables one to open down on the appendix or an abscess without molesting the small intestine or endangering the patient to the possibility of rupturing an abscess from the inner side, and spreading the infection to the general peritoneal cavity; and for this reason I wish to condemn the right rectus incision as a very bad one. It has been suggested that a fresh incision in the abdominal wall affords an opportunity for absorption of toxins generated by virulent bacteria against which the system has not had time to

fortify itself, as a contra-indication to operation: however, it seems more rational to think that the absorbing powers of the peritoneum far exceed that of the small abdominal incision required for an appendectomy.

Much has been said about the advisability of removing the appendix at the time of operation should an abscess be present. While many advocate against its immediate removal under these circumstances, my results have been most gratifying with its immediate removal, which reduces the amount of infection to its minimum, affords better drainage, and frequently prevents thrombosis, extension of gangrene, secondary abscess formation, and lessens the possibility of fistula.

The technic of removing the appendix varies with conditions present. When gangrene has not extended to the cecum the appendix should be crushed and inverted with the purse-string or some modification without ligating the appendiceal stump before inverting, as the purse-string and reinforcement pockets the stump of the infected appendix and renders the possibility of an abscess, which might rupture into the bowel or the peritoneal cavity.

In the more severe cases where the bowel is extremely friable, it is usually better to ligate the appendix without attempting invagination. Should gangrene of a portion of the cecum be present it is probably the wisest plan to encircle it with a purse-string and invaginate without removal. Plenty of drainage should be inserted, the cigarette and glass tube being preferable. Avoid gauze drainage especially at the stump, as adhesions of the gauze in this location can do considerable damage on removal.

After-treatment. Where there is more or less infection of the general peritoneal cavity the Fowler position is valuable as soon as the patient's condition will warrant it. If the infection is quite localized some benefit may be obtained by having the patient lie on his right side. If the stomach has been at all irritable some unpleasantness may be avoided by lavage before the patient recovers from the anesthetic.

Strychnia should be given hypodermically at three-hour intervals, salt solution administered according to the demands of the patient, if critical; subcutaneous or intravenous; however, if this is not deemed necessary, it may be given by the drop method, to which may be added adrenalin chlorid, suitable stimulants or peptonized foods.

No attempt should be made to move the bowels until the peritonitis has subsided, and this is a point that should be emphatically emphasized, as attempts to move the bowels too early have cost the lives of many patients. Morphin in small doses may be administered, especially if considerable restlessness and peritonitis exist. Hot or cold applications to the abdomen will aid in elevating the pain and discomfort of the patient. Eserin salicylate is of the utmost value in controlling gas formation. The administration of food except as nutrient enemata should be interdicted until the inflammation has subsided.

During my internship in 1903 it was our custom to irrigate nearly every suppurative case with iodin, which induced considerable trouble, causing the wounds to become chronic with sinus formation, delayed

healing and necessitated frequent curetting of the wound or the application of caustic to effect a closure.

My results have been much more satisfactory by employing the simple method of sponging out the wound; or if irrigation seems necessary, the normal salt solution is much more satisfactory, as it is not injurious to the granulation. Another point of importance is that an infected wound should have the same care as one that heals by first intention to avoid contamination.

From the above remarks the following conclusions may be drawn:

1. The slight decrease in the death rate of a disease so amenable to treatment as that of appendicitis is not in accord with the advancement of surgery.

2. The frequency of appendicitis in young children is not generally appreciated.

3. The fact that nearly as many deaths of simple peritonitis are recorded at the present time as appendicitis discloses many serious mistakes and nearly every mistake so made means the loss of a human life.

4. The prevalent idea that surgical cases must be governed by definite periods of time is a fallacy that should be eradicated from the future literature and discussion of this subject.

5. The diagnosis of appendicitis is still a conjecture with many physicians.

6. The radical operation affords the lowest mortality as conclusively shown by the statistics of Price and many others.

7. The mortality of appendicitis will continue high as long as the profession stands divided as to the time of operation.

8. The solution of lowering the mortality is harmony and an immediate operation.

THE STATISTICS OF THIS PAPER WERE COLLECTED AS FOLLOWS

Massachusetts.—From 1900 to 1908 inclusive: Appendicitis, 2,192 deaths; simple peritonitis, 4,007 deaths.

New Hampshire.—From 1902 to 1907, inclusive: Appendicitis, 161 deaths; simple peritonitis, 425 deaths.

Connecticut.—From 1904 to 1908, inclusive: Appendicitis, 494 deaths; simple peritonitis, 295 deaths.

Illinois.—From 1907 to 1908, inclusive: Appendicitis, 1,164 deaths; simple peritonitis, 372 deaths.

Maine.—From 1899 to 1908 inclusive: Appendicitis, 614 deaths; simple peritonitis, not given.

Colorado.—From 1905 to 1908, inclusive: Appendicitis, 465 deaths; simple peritonitis, 194 deaths.

California.—Year 1907: Appendicitis, 237 deaths; simple peritonitis, 171 deaths.

Maryland, except Baltimore.—From 1903 to 1908, inclusive: Appendicitis, 165 deaths; simple peritonitis, not given.

Oregon.—Year 1908: Appendicitis, 51 deaths; simple peritonitis, 53 deaths.

Louisiana.—Years 1906 to 1907: Appendicitis, 89 deaths; simple peritonitis, 66 deaths.

New Jersey.—Year 1907: Appendicitis, 183 deaths; simple peritonitis, 191 deaths.

Washington.—Years 1903 to 1906, inclusive: Appendicitis, 241 deaths; simple peritonitis, 264 deaths.

Vermont.—Years 1895 to 1909, inclusive: Appendicitis, 507 deaths; simple peritonitis, 713 deaths.

Indiana.—Years 1900 to 1909, inclusive: Appendicitis, 1,824 deaths; simple peritonitis, 2,775 deaths.

New York.—Years 1907 and 1908: Appendicitis, 275 deaths; simple peritonitis, not obtained.

DISCUSSION

Dr. Chas. Davison: Dr. Eddy has covered the ground so completely that there is little to discuss. Statistics are like a double-edged sword. They can count both ways. Their value depends on the men who make them and those who compile them. The statistics cited indicate that the mortality from appendicitis is not lowering. But we forget that appendicitis is relatively a new disease for which we have operated less than twenty-five years. Many cases, even in the past few years, have not been diagnosed, and the patients have died of something else. The diagnosis is being applied more frequently now to cases that formerly were called something else, and consequently the death rate is higher, although it is being lowered by operation.

It seems to me that the diagnosis is so easy that a mistake should scarcely be made. The cardinal symptoms of acute infectious appendicitis are pathognomonic, ruling out the fibroid appendicitis of Morris and appendiceal colic. There is first the diffuse abdominal pain followed immediately by nausea or vomiting, as the result of the pain. This pain continues for twelve, eighteen or more hours, and then it localizes at McBurney's point. Then there is the temperature elevation. When we have these symptoms in that sequence we know that it is appendicitis, and having made the diagnosis it is useless to do more because we cannot tell what is going on inside. Operation is demanded at once.

The treatment is operation in every case, except in the case of patients who cannot stand an operation because of some dyscrasia or who are sick from some other cause, where it would be fatal to operate, or where a surgeon cannot be obtained. In these cases the Ochsner treatment should be resorted to, but not in any other. The world owes Dr. Ochsner a debt of gratitude, not because of the effect of this treatment on appendicitis, but as a pathfinder, in the working out of the treatment of general suppurative peritonitis. We relieve the tension by draining. Put the patient in the Fowler position, seep out the pus by hot applications on the outside, wash out the toxins from the blood by proctoelysis and keep the patient absolutely quiet and give no food or drink by mouth. Everyone of these being necessary for success.

The simple case of acute infectious appendicitis demands operation. The best treatment in the early stage before the pus gets out of the appendix is excision. It is a simple operation without fatality. Unless there is a surgical accident which cannot be controlled, the patient is well in a short time.

In a case of ascending inflammation or spreading inflammation following the infection getting outside of the appendix, producing a localized peritonitis, operation should be performed, but I believe that many patients have succumbed to the surgeon's trying to do too much. Go in quickly and get out quickly. Do not break down any adhesions because they are protective. If you rub these off or break them down, you open the way for the infection to become more general. The infection should be drained with as much certainty of cure as in any other case when the surgeon does not do too much.

As to taking out the appendix, that depends on the condition of the patient, the location of the appendix and the adhesions present. If the appendix can be gotten out easily, without tearing the adhesions, which is true nine times out of ten, take it out quickly as a foreign body, but the parts should be drained thoroughly.

In the stage of abscess, where the pus has formed, where adhesions have formed in every direction, where the infection has partially sterilized itself, the

pus should be drained as we would an abscess elsewhere in the body. But if these conditions cannot be met in any case the Ochsner treatment is applicable and an appendectomy done as soon as possible afterward.

I do not quite agree with Dr. Eddy as to the location of the incision. When we expect to do a simple appendectomy the incision should be through the side of the right rectus muscle, making a small opening, pulling the appendix up through it and removing it. I apply two purse string sutures of catgut, one going through the intestine entirely, then invaginating the stump, drawing the purse string tight with the object of cutting off the blood supply, and leaving the stump of the appendix draining into the large bowel. Then cover up the stump with another purse string suture which will bury the first row of sutures and prevent seepage. Going through the rectus muscle gives poor drainage, but it is a good place if we wish to prevent the occurrence of hernia.

If there is a probability for draining as in the second form of appendicitis, the ideal incision is at the linea semilunaris. It is the thinnest part of the abdominal wall and is close over the seat of the disease. The fascia pulls apart and remains intact. If we try to go through the large flat muscles of the abdominal wall we destroy a certain amount of muscle tissue by infection and it is replaced by scar tissue which will thin out and hernia may occur subsequently. By going through the linea semilunaris, if hernia does occur, a herniotomy can easily be done and a firm abdominal wall is left.

In the abscess variety, I wall off the infected area with iodoform gauze, and drain by gauze only, not tube drainage. I let the gauze stay in place until it is pushed loose by the granulating tissue, at least a week; then take it out slowly, an inch at a time, so that the cavity can fill up without any pocket forming behind the gauze.

In the condition where there is an old walled off abscess, drain in a different way. Go right down through to the abscess, no matter where it is, because it is walled off, and you can do that work without infecting the abdominal cavity at all, if you are careful not to make pressure. You must tease your way through after striking the peritoneum because the cecum may be anterior to the pus and you may perforate it or some other portion of the intestine.

Dr. A. J. Ochsner: The paper is a credit to its author. I agree with everything he said in regard to the diagnosis. Ordinarily there is no difficulty in making a diagnosis if you make a physical examination. When one sees these cases in consultation, one frequently finds that the disease has existed for two or three days, and the doctor who sees the patient on the first day thought it was simply a case of indigestion, for which he gave him something. If he had made a physical examination then he would probably have made a correct diagnosis. By giving a cathartic or a little opium or morphin for the discomfort, he put off the diagnosis for twenty-four hours. Then an examination is made and the case correctly diagnosed, but, possibly, considerable mischief has been done in the meantime. Nearly always a cathartic has been given, and that moves the intestines about and carries the bacteria from the original site of infection, and that makes the condition much worse.

I have held for twenty years that so long as the infection is still in the appendix it should be removed at once because that disposes of the whole proposition, provided a competent surgeon is available. I believe that we can now all agree upon this point which I have always insisted. The reason for the mortality in appendicitis primarily is the failure to make a physical examination. The next reason for mortality in appendicitis comes from operating in cases in which the infection has already extended beyond the appendix; cases operated upon between the third and seventh day after the beginning of a severe acute attack. The third reason for the mortality comes from causing intestinal peristalsis by giving a cathartic or food by mouth. The fourth cause, which is not so common, comes from severe manipulations. The degree of manipulation required to make a diagnosis of appendicitis is very slight. I have seen very serious conditions occur from severe manipulations.

I have had this experience. A case of acute appendicitis occurred during the delivery of a child. I saw the patient on the fifth day when there was a severe peritonitis. It was too late for an early operation and too early for a late operation. I advised gastric lavage, nothing to be given by mouth in the way of cathartics, food or drink; rectal feeding containing twenty drops of deodorized tincture of opium was given every three hours. The next morning pulse and temperature were below 100. Two days later the temperature was 99 F. and the pulse 80. The patient continued in a normal condition two days; on the night of the third day the temperature rose after a severe chill. Later she had another chill. On inquiry I learned that she had been examined thoroughly by four physicians, then she had the chill and the rise in temperature. Three days later she had another violent physical examination made during a consultation with the same result. They finally left her alone and six months afterward we took out the appendix. The appendix had been gangrenous and during each of these examinations a little pus had been squeezed out of the appendix, and the chill, the rise of temperature and pulse were directly due to the spreading of the infection caused by these manipulations.

In these cases I place a large moist hot dressing containing one part of alcohol and two parts of saturated solution of boric acid on the abdomen. It is comfortable and no one is likely to touch the patient because it is too much trouble to take off the dressing.

Never operate after a beginning peritonitis until that condition is over.

When you cannot operate, wash out the stomach, give nothing by mouth until the acute attack is over, and then you can operate in safety. Dr. Deaver says that his mortality in this class of cases, since he has adopted this method, has been reduced to one-fourth of what it was before. Dr. Mayo says the same thing. You will get less than 2 per cent. of mortality in gangrenous and perforative cases if this method is employed.

You have the best possible condition for elimination of the infected organ and the prevention of general peritonitis if you give Nature a chance. In front and to the outer side and behind the infected appendix is the abdominal wall and below the pelvic cavity, which is accustomed to infectious material. There is the omentum which will surround the diseased appendix. This leaves only the inner side bounded by the small intestines which is the dangerous zone. The leukocytes rush to the rescue by devouring the bacteria and making an auto-vaccine. The omentum and peritoneum dispose of bacteria in infinite numbers, providing you keep the infection in that little circumscribed corner. The worst you will have is a circumscribed abscess which you drain easily and safely.

Dr. Eddy makes this mistake. He looks upon this infection on the third or fourth day as he looks upon an abscess. The diphtheria simile is wrong. The similarity is the same as in snake-bite. If you can shut off the circulation in snake-bite and stop the venom from circulating, by immediately constricting the extremity between the body and the location of the bite, you are safe, but let it spread and no matter what you do, the patient will die. In the same way all you have to do with the appendix is to hold still and give Nature a chance to build a cofferdam around the infection. So far I have not seen a single patient die from any form of appendicitis in which neither food nor cathartics were given after the beginning of the attack. That has been the experience of all men who have followed this method.

There is nothing more certain than what an appendicitis case will do if you give absolutely nothing by mouth, wash out the stomach so that nothing can pass into the intestines to cause peristalsis and put on a big dressing to prevent diagnostic abdominal massage, give exclusive rectal feeding, with proctoclysis according to Murphy's method. That patient will get well, unless he has been given cathartics and food before you begin the treatment. So that there is a certainty of what appendicitis cases will do if treated as they should be. Even in cases in which cathartics or food have been given before they are placed under this form of treatment the mortality is very small.

The incision is really a matter of personal choice. Men of equal ability have a different choice of incision. When we operate on a gangrenous appendix with pus, we go through the rectus muscle and then drain through a small McBurney incision so that we can sew up the primary wound. That is the method Deaver follows, while others follow the method Dr. Davison described. But that is really a personal matter.

The after treatment which Dr. Eddy described is good. We invariably employ the Fowler position in suppurative cases and fill up the blood-vessels by Murphy's proctocolysis. When these patients are nauseated we wash out the stomach, no matter whether there is emesis or not. That is as important after operation as before. Every patient who has nausea or vomiting or gaseous distention due to any intra-abdominal disease except a perforation of a viscus, should have his stomach washed out, no matter whether these conditions be due to gall-stones, peritonitis or whatever other condition may cause these symptoms.

Dr. I. H. Eddy, closing the discussion: If we could have harmony among the profession in this matter, we would have fewer cases of appendicitis of the suppurative and gangrenous type. While we are arguing as to whether or not to operate the patient is dying. In these infections, especially the streptococcal type, the time comes in many of them where the accumulation of infection and toxins overcome the resistance of the patient; however, by establishing drainage and eliminating a certain amount of infection and toxin, I believe many of the borderline cases can be saved. It seems to me in so severe an infection as acute appendicitis waiting for a more opportune time to operate is like a bomb with an ignited fuse, hoping as it were that the fuse may go out before the bomb is exploded. A few years ago I investigated the records of this city (published in a paper by Dr. Barrett) from the time of the first recorded death until about four years ago. At that time there were between three hundred and four hundred deaths from peritonitis yearly, but as the death-roll of appendicitis increased that of peritonitis receded in about the same proportion.

MEDICAL EDUCATION *

A. M. CORWIN, M.D.

Chairman of Chicago Medical Society Council Commission on Medical Education
CHICAGO

I am here because, as formulator, and mover of resolutions in the Council of the Chicago Medical Society, establishing the Chicago Medical Society Council Commission on Medical Education, and enforced Chairman of that Commission, I have a lively interest in the subject and perhaps some ideas worth while.

It is evident that on an occasion calling for a short paper, one must confine himself to some single phase of so big and many-sided a subject, or else take a generic, panoramic view. I have chosen the latter, relying on those who follow to discuss specifically. The aim will be to give you my personal viewpoint, briefly outline the purpose of the Commission, and glance at the horizon of the theme.

Is this really a matter to interest the general practitioner? None so much as he. No man who can look back in Chicago twenty years or more to those scant two years of six months each, during which he cultivated ischial calluses by long hours of contact with the "perch," but is

* Read, by invitation, before the North Side Branch of the Chicago Medical Society, Jan. 12, 1912.

wide awake when you say medical education. For under that label he absorbed the smell of iodoform and of the dissecting room, he memorized a peck or more of useless drugs, looked at a microscope, bought a long-bladed amputating knife (which he now uses for paper cutting), purchased calf-bound books which speedily became obsolete, learned how great was the orotund professor way down yonder in the arena, and after being roughly passed up by his fellows a sufficient number of times to knock off his corners, he was gently passed out by the faculty into the university of the world, to learn something practical from patients. The patients taught him much and considered this value received, which it often was. Assuredly the general practitioner and specialist alike are interested in this subject, for their sons are their competitors to-day, and to-morrow take their places. On them the practitioner must depend to keep him bright by the friction of competition and posted in the newest methods of laboratory and clinic. And when he drops the torch it is these sons who must catch it up to bear it with fidelity or hide its light under a bushel. Where is there a man of us who does not hope for his successor vastly better chances than he had himself?

Bread winners, fee collectors of necessity, the majority of us love our profession, are jealous of its reputation and quick to resent a slur on it.

The North Side Branch does well to set in motion a wider discussion of medical education among Chicago practitioners, whom it touches so intimately. There is special reason why we Chicago men are at heart interested, because we live in one of the world's best centers of medical thought, where an immense amount of first-class teaching, first-class operating, first-class work in internal medicine and laboratory research is being done—where, too, much has been tolerated that is unworthy.

The latter interests us partly because it has been held up to public view, as if it were our chief characteristic and so largely dominating the situation as to make us the so-called "plague spot" in the educational universe. Now we are inclined to feel that it is wrong to denounce Chicago in wholesale fashion, pointing to the black when the shadow is so small a part of the picture.

With no brief in defence of what is base or below the par of honor and efficiency, but with the desire to encourage every effort to help to put all the Chicago medical colleges and schools on a foundation of self-respect and public confidence, abreast of the best on earth, let us be fair enough to recognize that medical education has made tremendous strides in the last few years, during which some schools have obtained university connection or large endowments. With these aids in sight, they have been able to advance their standards, very much to their credit, even if failing in expected funds, they may have so far cut down the student income as to temporarily handicap them. It is evident that some of the less favored institutions were thus forced into the alternative of unfavorable comparison as to educational requirement or suicidal exaction of more strenuous standards.

How far and how fast we should try to push up these standards should be to some extent governed by friendly conference, open discus-

sion, wise and brotherly agreement between the colleges and the other forces working to better the situation all along the line, because of vested interests too valuable to ruthlessly wreck; not by secret plot, political pull and the long knife of competition striving to put some child "out of business" who really is a very promising child.

Our best colleges of yesterday were no better than the second raters of to-day. Before attempting to put the latter to sleep, let us be sure that they will not strive to emulate their more fortunate brethren. For emulate they must. Says the A. M. A. Council on Education: "So soon as conditions warrant the minimum requirement should be enlarged to include at least one year's college work in physics, chemistry and biology, and a reading knowledge of French or German." In that phrase, "so soon as conditions warrant," is enough elasticity to cover fair treatment.

All the while the fact is inevitable that we cannot be satisfied, in the long run, in this country with anything less than the best there is in the world in the preparation of doctors.

Is there any valid reason why Chicago should long play second rôle to Berlin or Vienna, Paris or London in the quality of her training for your boy? To say the change must take place now and occur in such an order, by revolution instead of by normal growth stimulated by active effort, is a different matter. Whatever the many of organized medicine can do to boost, to encourage free discussion, to spread information, to foster cooperation of forces and conservation of effort, it should do. The excellent work accomplished by the A. M. A. Council shows that the number of medical colleges in the United States eight years ago was 166, the high-water mark. This number has rapidly fallen to about 120 to-day, by amalgamation of two or more, or by death from inanition. The process of elimination is bound to go on as state and other university connections and private endowments enable the raising of standards to meet reasonable ideals. What the final reduction shall be no one can tell. During this time, eight years, the number of medical students has fallen from 28,142 to something below 21,526; the graduates from 5,747 in 1904, to 4,440 in 1910, up to 1911.

Under former conditions medical practice was seemingly threatened with overcrowding, so that the economic outlook as well as the prospect of a degenerating profession was not encouraging. But the facts seem to be that even under the rapid multiplication of medical schools up to 1904, since which time they have decreased, the proportion of doctors to population remained about one to 600, owing to the increase of the people.

Unless some check had been put on the number of schools under the old proprietary system, in time the congestion of the profession would have been probable. However, it was not so much this congestion that threatened us as the multiplication of poorly equipped men at the hands of a system which made the medical college the personal property of a few professors, solicitous to see their stock pay good dividends and too little concerned about the quality of doctors that they turned loose on the public. It was not the fault of us students of twenty and thirty years

ago that we had to learn most of our clinical lessons after graduation, but of the chaotic system of college equipment and management, and of state control. How marked the change that has taken place in one decade is best appreciated by the graduates of ancient days, who have been driven to various postgraduate measures to keep them in the van of practice.

The need to-day is not so much of fewer institutions as more uniformly better ones; not so much of fewer doctors as more uniformly better ones; and in a general way the better the training, the better the doctor. Whether there shall be fewer medical schools and doctors, or more, they must be better for the sake of the public, for the sake of the profession. We must agree, too, that the well-trained doctor must be prepared not only to diagnose, treat and prevent disease, but better fitted to fill the shoes of all-round citizenship; fitted to write, to speak, to organize, to lead in matters civic and social, religious and economic. For no man gets so close to the life of the people as the physician, no man more than he carries on his shoulders the weal of the community. Time would be well spent in reviewing the influence of our calling in human affairs in this country and abroad, and in pointing the moral.

I submit that we may very profitably prepare papers on the lives of Rush, Virchow and other medical leaders in popular reform and thought all the way back to Luke, the Good Physician and Biographer.

Incidentally, there are those who hail the day when Chicago may have but one medical college or university school — superb, all inclusive, all authoritative — a perfect educational machine, a gigantic trust. Personally, I feel that several such centers equally high would better insure progress by the honest, earnest rivalry that stimulates to excel. But this is a mere matter of opinion. Time may bring the other.

As an indication of the inevitable rise of public sentiment and the dominion of the best ideals in this country in late years, note the fact that of 120 medical colleges, forty-seven, including most of the state university medical departments, have adopted the preliminary requirement of one or more years of collegiate work beside the high school.

Perhaps of even greater significance is the minimum requirement of one or two years more than the high school course, adopted by nine state examining boards. Indiana on our eastern, Iowa on our western border are of the number, and with them are both Dakotas, Minnesota, Colorado, Connecticut, Kansas and even Utah. Into these states may not go for license to practice any graduate from our eight Chicago schools, except from two, unless they happen to have more than is required by those schools or by our practice act. It is high time for the whole profession and the intelligent laity of our state to do some real thinking.

But the foregoing remarks touch only a small part of the title: what does medical education mean? What is its scope?

A. On the one hand are its sources.

B. On the other is the control of it through the administration of state laws.

Under the sources must be counted, of course, the undergraduate training, preliminary and curricular. We shall not go into these here. The ideal has been worked out by those best fitted to handle the job, academically, practically, qualitative and quantitative. But the problem of standardization of curriculum of 900 well-balanced hours in each year within four consecutive years, is not so difficult, nor the general acceptance of its provisions so hard to obtain as the settlement of the question of preliminary training. This is fairly the storm center of opposing forces.

Four years of accredited high school or equivalent academic preparation added to grammar school is little enough, but the term accredited is troublesome. A very full report of the A. M. A. Council on Medical Education, published in *The Journal A. M. A.*, Aug. 10, 1911, sets forth the whole question, and recommends the brand wherewith acceptable medical colleges should be branded. A careful study of this is exceedingly profitable.

The value of the hospital year is well enough recognized even by medical students to make competition among them keen. And the rivalry between our own medical schools to cinch Cook County Hospital internships is wellnigh tragic in the give and take of reciprocal courtesies. The time is at hand when every medical college will have to guarantee an internship to each of its graduates, and the medical diploma without it will be like a dinner without meat. The modern multiplication of hospitals, especially if colleges continue to decrease in number, would seem to offer an easy answer to the problem. But there will have to be better cooperation between the medical schools than at present, and some means provided for standardizing the quality of work done in these hospitals, lest some students become infected with poor technic, haphazard management, slipshod methods of diagnosis and the operative dare-deviltry of would-be surgeons, more commendable for their nerve than for their judgment and skill. If the examination of medical colleges has stirred up a muss, we suggest that this field of hospital inspection and regulation is a fertile one for some new commission or philanthropic foundation looking for trouble.

And now opens up the wide acreage of postgraduate culture, not usually included under the subject in hand, but a most important part of it. Chicago may well look to her postgraduate schools, take account of stock and perhaps advertise a bargain-day sale. There is no greater need in the field of medical education than the establishment of an all-round, well-balanced institution or system of institutions to meet the desire of doctors to brush up a bit. And this is said with full appreciation of the excellent work being done along some special lines in Chicago. A commission to take up this question would also have its troubles.

The fifth source of medical education is the hospital, together with the dispensary. Of inestimable value, both undergraduate and postgraduate, in the manufacture of good surgeons and good internists: inestimable, too, is the harm done by both in their abuse of a sacred

trust—medical charity. The Chicago profession leading in this direction has only begun to touch on the dispensary share in the evil. The hospital is the big end of the educational feature, and responsible, we believe, for the big end of the wrong.

Sixth is the medical society, the power of which in the making of better physicians is nowhere so exemplified as in the achievements of our own society in its splendid federation of branches. The malign gossip of its detractors and misinformed critics is only a sad commentary on individual selfishness as opposed to patriotic principle.

Seventh, the practitioner himself. What manner of men are we in Chicago and in Illinois? Where did we graduate? How long ago? How many of us have taken advantage of the many sources of information referred to? The commission proposes to make a canvass of this situation.

Eighth is the library, its use in the college and out of it. A comparison of the number of medical men who patronize the medical library and the public using the general library, while not wholly fair, was surprising, and not to the credit side of our own profession as a learned one.

Ninth: To ignore the modern private and public laboratory in stimulating doctors to better know their patients would be unfair.

Tenth is the school of nurses.

Eleventh: The medical journal as a factor in elevating or lowering medical standards is obvious.

The advertising policy of medical journals in general has not been sufficiently scrutinized by our profession. The *A. M. A. Journal* and Council on Pharmacy have done valiant service in emphasizing this matter. Self-respecting doctors should refuse to subscribe for, contribute to or accept free copies of medical journals which persist in carrying obnoxious advertisements.

Twelfth: The lay press as a source of medical education is too often negative, positively harmful in its habits. Whether selfishly or maliciously so matters not so much. To misquote or openly fabricate or suppress facts or to refuse a hearing regarding a medical question, one side of which is published, is so common that we have come to expect it as a part of our recompense in the service of the public. But I fancy that an interview by representatives of organized medicine with the editors of the daily press, to ascertain who of them will give us a square deal, might be followed by the proper use of our own *Bulletin* in support of those papers who play fair.

The negative sources of medical education include all garblers of truth. I refer to quacks, advertisers, faith and false healers, and all manner of fake pathists who hoodwink society with one hand and empty its purse with the other. New laws only can control these. Our friends, the druggists, have not been altogether clean in this direction, for in the sale of patent medicines they have knifed the public and knifed the profession for a price, with the excuse that it was merely necessary business. So says monopoly. So says the pickpocket.

Doctors have been badly educated also by the proprietary gentry who, with lead pencils and smooth samples, have wheedled them into largely prescribing lovely "dope" with fancy names easily remembered by the laity. Who made Listerine and Glycothymoline and a dozen other household words? Neither the mixer nor the consumer. The doctor and the druggist have worked together for their own undoing.

B. The control of our educational system by the state through examining and licensing boards, and practice acts, is the other leg on which medical education stands. In high-class laws, high-class boards to administer them, and interstate standardization and cooperation for reciprocity lies the key to great reform in our educational system. This obviously depends on organized effort of the profession, education of the laity, and the election of clean, able men to our legislative halls — here rests the value of the doctor in politics.

One glance at the various practice acts in our fifty states and territories is almost disheartening, and yet much order is being wrought from chaos by getting together.

A single association including all our state boards is essential. They must get together so that worthy physicians in Illinois may practice in any other state or territory under our flag.

Publicity, examination, free discussion by honestly opposing elements, this combination is the source of light. Reform of conditions comes only through propaganda, informing and arousing the people affected by them. Only on the basis of wide education of the public is sound opinion possible. Criticism is sometimes raised that this or that committee has no power to enforce its findings, no authority, no standing, or that it is for whitewashing purposes. This one has the important function of accumulating facts, and when such facts are analyzed from the standpoint of conditions and conditions show a need of improvement, the majority of the people interested can and will act to bring about improvements. It is with this in mind that this Commission has been formed; it is the Commission of the Chicago Medical Society; its business is to find facts, bring together interested parties, and tell the profession all about it. Indiscriminate criticism of people and things is of no account, unsupported by evidence.

So the key to the situation in medical education is the finding of facts, and yet more facts, and then publication and discussion. As a result we shall know more nearly what is needed and how to do it.

This Commission goes at its work with no preconceived prejudice except for truth and improvement of conditions. Each of the eight colleges recognized by the State Board of Health is represented on it; its hunt after facts will be honest, and the plan of examination as exhaustive as possible. Honest differences of opinion cannot refer to these facts as such, but may properly spring from interpretation and varying ideas of what is best, now and in the future.

One optimist counts more than a whole regiment of pessimists. The booster is the genius of progress. To chronically knock and throw mud is a deplorable habit. To observe keenly, to criticize honestly and intel-

ligently and then to politically organize for reform should go hand in hand with a frank appreciation of merit in the activity of friend and foe alike. The optimist chooses to walk in the sunshine, but he scrutinizes the shadows. The booster bows his back to the load of gold, but refuses to shoulder junk. The search for truth anywhere is golden. Boosters' clubs and optimists' fraternities should find many ardent adherents among doctors. Let the members of the North Side Medical Society enroll to push this home movement for the common good; the corners of our mouths are up and there are signs of better weather.

SUMMARY OF SCOPE OF MEDICAL EDUCATION

A. Sources of medical education.

I. Positive.

a. Undergraduate.

1. Medical schools and colleges.
Curriculum.
Preliminary requirement.
Hospital year — intern.
2. Preceptors.

b. Postgraduate.

1. Schools.
2. Hospitals, public and private (the abuse of medical charity).
3. Dispensaries, public and private (the abuse of medical charity).
4. Schools for nurses.
5. Private and public laboratories.
6. Medical libraries.
7. Medical societies.
8. The practitioner himself.
9. Medical journals.
10. The lay press (too often negative).

II. Negative sources of medical education:

Quacks, faith and fake healers.

Druggists in the sale of patent medicines.

B. Control of medical education through practice acts.

Licensure.

Regulation of practice.

Interstate standardization. Reciprocity.

MEDICAL LEGISLATION CONCERNING MEDICAL EDUCATION IN ILLINOIS*

GEORGE W. WEBSTER, M.D.

President, Illinois State Board of Health

In 1776 at the commencement of our history as an independent Nation, the thirteen States had a population of about three millions of people scattered from

* Read before the North Side Branch, Chicago Medical Society, Jan. 12, 1912.

New England to Florida, and between three and four thousand practitioners of medicine, only four hundred of whom had received the degree of M.D.

There were two medical colleges and one permanent hospital, and two States, New York and New Jersey, had laws defining the qualifications of physicians and surgeons, with provisions for enforcing an observance of the same.

By the union of the several states under a written constitution, all matters pertaining to general and medical education were left to the individual states. Six of the original thirteen states recognized their constitutional right and duty to legislate on the subject of medical education and medical practice during the first twenty years after the achievement of independence. Gradually other states passed laws, but they did very little to regulate the education, and less for the licensing of physicians, and they granted charters for new medical colleges as often as they were asked to do so by either ambitious or unscrupulous members of the medical profession. *The degree of M.D. was almost everywhere accepted as authority to practice medicine without either examination or a license.* The college that offered to confer the degrees on the shortest course and smallest fees, generally drew the largest class. Under these conditions and tendencies, the annual course of medical college instruction progressively shortened from six months to sixteen weeks or even less and no semblance of preliminary education was exacted, and, while the population had only increased from three million to seventeen and a half millions, in the year 1844, the number of medical colleges had increased from two to forty and the annual number of graduates from fifteen to over one thousand, this being one graduate each year to each 17,500 of the population.

"During the first thirty or forty years of our national history, the legislatures of nearly all the states then existing, except Pennsylvania, Virginia and North Carolina, had enacted laws for the avowed purpose of protecting the citizens from the impositions of ignorance and empiricism, and for promoting medical science. That these were the real motives for enacting the laws referred to, and especially the first one mentioned, that of *protecting the citizens against impositions*, is abundantly shown by the preamble and titles attached to the several acts. The idea of *protecting the profession* or of *investing it with special privileges*, was the discovery of a later period and was diligently fostered by all the advocates of 'pathies' and 'isms' of the day. And yet, so persistently did the advocates of these represent to the politicians and legislators of that time the idea that all the penalties and restrictions against uneducated and unlicensed practitioners were only *designed to enable the regular profession to employ a monopoly of the practice and to restrict the liberty of the citizen in the employment of whomsoever he pleased*, that during the decade from 1840 to 1850, nearly all such restrictions and penalties were repealed by the legislatures of the several states, and it was during this period of adverse legislation and active aggression on the part of the advocates of the two leading systems of exclusive dogmas in medicine, that the movement in favor of establishing a permanent, national medical organization began to attract attention and to assume definite shape."—(N. S. Davis.)

It was under these deplorable conditions that Dr. N. S. Davis, then a young delegate from the Broome County Medical Society, at the annual meeting of the New York State Medical Society, presented a set of resolutions declaring in favor among other things of "having all examinations for license to practice medicine, conducted by State Boards independent of the college."

These resolutions laid on the table for a year. At the meeting in 1845, they were fully discussed and it was pointed out that if this standard was demanded for New York alone, it would only cause the students to abandon these colleges for those of Pennsylvania or the New England States.

It was thus clearly recognized that what was needed was an elevated and uniform standard of requirements for the degree of Doctor of Medicine by the various states, with the examinations in the hands of examining boards. This need led to the calling of a national convention which met the next year, 1846, in New York City, and this led to the formation of the American Medical Asso-

ciation, which was organized at Philadelphia in May of the following year, 1847.

At this meeting, Dr. Davis' resolution that the teaching and the licensing power be separate, created more discussion than any other. Notwithstanding the fact that under our constitution the license and control of the practice of medicine is clearly recognized as a legitimate exercise of the police power, and notwithstanding that as early as 1844, Dr. N. S. Davis had so clearly and forcibly pointed out the necessity of licensing boards separate from the college faculties, and notwithstanding that this was urged, not as a measure in favor of the physicians, but as a means of protecting the people against incompetency and fraud on the part of the medical profession; nevertheless, the people of the several states were very slow to recognize their rights under the Constitution and to invoke the police power by means of examining boards. And if we except the law of 1817, the Act of 1877 was the first attempt of the State of Illinois to legislate in regard to State Medicine and to regulate medical education and medical licensure by law.

At this time the conditions obtaining in the state were indeed deplorable, as there were 3,600 non-graduate physicians practicing medicine in the state.

In 1880, there were 110 medical colleges in the United States, only fifteen of which exacted any entrance or matriculation requirements whatever, and in only fifteen was the course graded, and the average length of each of the two requiring repetitional courses was sixteen to twenty weeks. By this time, 1,400 of the non-graduate practitioners of medicine in Illinois had either left the state or ceased to practice. There were eight medical colleges in Illinois in "good standing" with the State Board of Health, in 1880, exactly the same number as there are to-day. Under the Act of 1877, the State Board of Health was given rather large sanitary, executive and legislative powers, one of the most important of which was that it clothed the Board with discretionary power to determine what should constitute a medical college in "good standing," such recognition entitling the holder of a diploma from such an institution to licensure in the state without examination. At the present time it admits him to examination. In accordance with this power a "Schedule of Minimum Requirements" was promulgated in 1880. Within three years the number demanding an entrance qualification had risen from fifteen to sixty-one, and the number of medical colleges requiring three courses of lectures had increased from thirteen to sixty-eight.

The three principal objections to the Act of 1877 were that it exempted all persons who had been practicing in the state for ten years, whether graduates or not; the fee of five dollars was too small to permit the Board to carry on the work satisfactorily and enforce the Act; the prosecution for practicing without a license was in form criminal, thus making it the statutory duty of the state's attorney to prosecute when complaints were made. The Board itself had no administrative powers in this direction.

The Act of 1877 was repealed by the Act of 1887. The chief defect in the Act of 1887 was that it provided for the issuance of a license on presentation of a diploma from a recognized medical college, thus *practically leaving the licensing power in the hands of the medical school*, an evil that, as I have already stated, was clearly and forcibly pointed out by Dr. Davis over forty years before. Chiefly because of this provision, the law of 1887 was repealed by the Act of 1899. This law exempts no one as did the law of 1877, and recognizes no diploma as entitling the holder to a license, as did the law of 1887.

The law of 1899, with the numerous amendments passed since that time, is the Medical Practice Act which governs and limits the Board in its work of regulating medical education and licensure in the state, and it is to this law that I wish to briefly refer.

First, as to its defects. One of the defects in the present law is that it does not enable the Board to discipline for unprofessional conduct, or for any cause revoke the license of the holders of licenses issued prior to July 1, 1899, the time of going into effect of the present law. Governor Deneen has recommended that the law be amended so as to give the Board jurisdiction over all certificates ever issued and the Board in 1907, 1909 and 1911 sought to secure an amendment to this section from the legislature, but owing to a want of support from the

medical profession outside of the assistance of the Public Relations Committee of the Chicago Medical Society, and because of certain well known opposition, such as the resolutions of the Williamson County Medical Society, as well as the apathy and indifference of the ILLINOIS MEDICAL JOURNAL, it has failed to secure it. This amendment should be secured at the next meeting of the General Assembly, and it can be if it has the active support of the medical profession of the State.

The next point to which I wish to refer is the exemption under Section seven, of "Any person who ministers to or treats the sick or suffering by mental or spiritual means, without the use of any drug or material remedy." This has been referred to in the official organ of the State Society during the past year as follows: "Then comes the number, by no means small, of Christian Science healers. New Thought practitioners, Menopaths, and other phantastical names, pretending to use no medicine, and ostensibly curing by suggestion. We would estimate these at not less than three hundred."

The responsibility for the exemption mentioned in Section 7, lies at the door of the Legislative Committee of the Illinois State Medical Society of 1898 and '99. Each and every member of that Committee agreed in writing that the exemption should be inserted in the present Medical Practice Act then pending in the General Assembly, and the editor of the ILLINOIS MEDICAL JOURNAL making the criticism above referred to, was a member of that Committee. That section of the law concerning midwifery should be amended and the standard raised, but that is too large a question to be discussed at this time and is well worthy of an entire evening's discussion.

Perhaps the most important feature of all of the Illinois Medical Practice Acts was the one which authorized the State Board of Health to establish a "Schedule of Minimum Requirements" with which all medical colleges must comply in order to be in "good standing" with the Board. This provision authorized and empowered the Board to fix not only medical standards, but to determine the character of the entrance requirements as well. This authority and power remained in the hands of the Board from 1877 until 1908, when the legislature passed an amendment to the Medical Practice Act, Sec. 2b, taking from the Board the authority to establish a standard of preliminary education and providing that the diploma of an approved high school, or a certificate of a high school education, issued by the State Superintendent of Public Instruction, or like state officer, "*shall be considered satisfactory evidence of preliminary education.*"

This fixes the entrance requirement in this state by law. It can only be changed by repealing or amending the law at some future meeting of the General Assembly, and I believe that this is the largest and most important and difficult question to be considered and acted upon by the Educational Commission of the Chicago Medical Society.

The above amendment to the Medical Practice Act was passed by the General Assembly in 1908, and I know of no one in the State Society who opposed it.

There are nine states and forty-seven medical colleges in the United States which now demand one or more years of college work in addition to a high school diploma as an entrance requirement *on paper*. But it is true that some of these states do not even require *documentary evidence* of a high school education.

If the Illinois standard of entrance requirements is too low, then the medical profession alone is to blame for it, and it can only be remedied by an amendment to the present law, or by repealing that part of section 2b, which fixes the entrance requirement, and then inducing the State Board of Health to change and raise the requirement.

So far as I am concerned, and I voice my personal views only. I am glad of this opportunity to go on record again on this question, although I have been on record for many years.

In a report on "The Curricula of American Medical Colleges," which I made at the meeting of the National Confederation of State Medical Examining and Licensing Boards at Atlantic City, June, 1904, among other things I said:

"The idealism of the German university maintains that the object and aim of an education is to develop in a symmetrical manner the mental faculties, to enable

one to live to the utmost, to enjoy being. It is a doctrine of being, rather than of doing, of idealism rather than of realism, of the theoretical rather than of the practical."

On the other hand, there is a very large class who insist on the social, and more especially the economic, utility of all human actions. They believe in the practical, the utilitarian, that which produces immediate results. They want men who do things.

The former argue that a man should devote $7+4+4+4+2=21$ years of the best of his life to acquiring an education. Such a man, if he was always well, enjoyed good health in childhood, missed no time at school, and took no time for travel, would be ready to begin to earn his first fee at twenty-seven or twenty-eight years of age.

A system of education which demands that a man shall spend twenty-eight or thirty years of his life in preparation for active participation in its duties, that he earn his first fee at even 25 or 28 years of age, seems in this eminently practical age, and as measured by organized society, to be impractical and impossible.

But there is no standard of ideals or idealism. Culture is a changing ideal and cannot be used as a permanent test of educational processes.

Unfortunately, the question in the past has been, not what constitutes the very best preparation for the very best kind of life work, but, where can I get the largest number of degrees with the least work, the least expenditure of time, and a minimum of expense.

To-day it is not altogether a question of that culture and knowledge and idealism which will be a comfort and a solace to men of wealth and leisure; we have living issues and we want men and modern methods.

Between the extremes of idealism, on the one hand, and pure commercialism on the other, is there not some common reasonable middle ground which is wise and conservative?

May we not agree upon certain principles, certain regions, even though some of the boundary lines remain at least temporarily in dispute? To-day, as never before, we are confronted by commercialism, the feverish pursuit of what "pays," as the one end and aim in life.

Uninfluenced by pecuniary reasons, unfettered by the influence or the arguments of the colleges themselves, especially the argument that they will suffer loss, we should decide what ought to be done; we should determine what constitutes a satisfactory curriculum, and this should be adopted and then enforced.

We should determine, as far as we may, what constitutes the ideal medical course, and then what kind of a foundation should there be under such a course, in other words, the character of the preliminary training.

I believe that the liberal degree has, in a sense at least, determined our educational standard; that it is the mark of the well educated man, irrespective of his calling, and that for those who are considering merely technical training rather than culture, there should be at least one year added to the medical course, a connecting link, and at present a weak one, between the high school and the medical school, and consisting of physics, chemistry, general biology and German or French, or both. Possibly the plan suggested by President Butler, of Columbia, would be even better than this. He says: "There should be a college course of two years in length, carefully constructed as a thing by itself, and not merely the first part of a three year or four year course, which will enable the intending professional students to spend this time as advantageously as possible in purely liberal studies."

Last year, seven years after I had made the foregoing recommendations, the Council on Education of the A. M. A., said, "A college education is recognized as a desirable preparation for a limited number of men, *but it is thought that it is not and never will be desirable to make such college education a minimum requirement to the study of medicine*, as it would make the age of graduation from 27 to 28 years, which is regarded as too old a period at which the young medical man should begin his life's work." and they recommended "a premedical course of

one or two years devoted to the sciences of chemistry, physics, biology and to modern languages," to be "*enforced as soon as conditions warrant.*"

Has this time arrived? Should Illinois raise the entrance requirement to one or two years of college work in addition to a high school diploma, demanding documentary evidence of both, as an entrance requirement, enforcing it strictly and literally, and *do it now*?

The further fact that the Illinois Legislature enacted a law, making the high school education the highest entrance requirement that can at present be exacted, and at the same time preventing the state board from exacting a higher entrance requirement, would seem to show that the "plain people" are not making a very insistent plea for a higher entrance requirement.

Before attempting to answer this question, the following facts should be carefully weighed and considered.

First: It cannot be done in the very near future for reasons already assigned. It will require an amendment to or repeal of Section 2b of our present law, and then notice of a reasonable length must be served on the colleges.

Second: We cannot set up any standard for Illinois Medical Colleges exclusively; it must apply to *all colleges*, in the United States and elsewhere.

Third: There are over forty states and over forty standards and most of the states and the leading states at present, require only a high school education and many of them require no *documentary evidence* even of this. Illinois was, I think, the first state in the Union to exact this requirement and it is as rigidly and thoroughly enforced here as it is anywhere by any state in the Union.

Enforcing the present standards has caused a rapid decrease in the number of medical graduates and of medical students in the medical colleges of this country. For example, in 1910, there were nearly one thousand fewer graduates and nearly four thousand fewer students in the medical colleges of the United States, than there were in 1900; while in law, theology, pharmacy and veterinary medicine there had been a very substantial increase.

Fourth: It would probably be impossible to enforce a one or two years of college and a high school diploma and have it strictly and absolutely an *entrance requirement*, exacted of all applicants *before matriculation*. With forty diverse and more or less loosely administered standards of entrance, with many of them permitting of "conditions," to be made up subsequent to matriculation, the problem is easy only for those who have had no practical experience in this work.

Take the conditions as they exist to-day. Suppose a man enters the medical department of our own state university on credentials which are not satisfactory to the State Board of Health, graduates with honors, obtains a place as intern and comes up for examination. Shall we refuse him an examination? Those who ask for a strict, literal compliance with the law say, yes, refuse to examine him.

Let us suppose another case. Suppose a student enters Jefferson Medical College, Pa., on high school credentials which are satisfactory to the Pennsylvania board, but not to the Illinois board. Suppose he graduates with honors and returns to Chicago where his family and property and friends are and wishes to be examined. Shall we refuse him? Those who maintain that an entrance requirement should be strictly and rigidly enforced say, yes, refuse him. Instead of doing this, we send him to the State Superintendent of Public Instruction, and a certificate from him certifying that the applicant has passed a satisfactory examination in all the branches of the curriculum of a full four year high school course is accepted as a satisfactory entrance credential, although not obtained, or presented until after the completion of his medical course. In my estimation, this is the only fair, equitable, just position to be taken.

These questions are important, fundamental, urgent, practical and vital, and yet they are questions on which, so far as I know, the medical profession of this state, through its State Society, or its committee on Medical Education, has never expressed itself.

The time and opportunity have arrived. Will you go on criticising and finding fault, or will you put yourselves on record in regard to these important problems?

I take it as an accepted fact that the future of medical education is largely along the lines of preventive medicine, public hygiene and sanitation; that at the present time the strong tendency is to transfer all medical education to university surroundings; that in these surroundings university standards will be established and maintained and largely supported by the state, in the interests of the people, and that, in the words of Mr. Flexner, "those who represent the higher ideals of the medical profession must make a stand for that form of medical education which is calculated to advance the true interests of the whole people, and to better the ideals of medicine itself."

In the light of these facts I think that Illinois should keep in the front rank and should raise the entrance requirements as soon as this shall be found wise and practicable.

DISCUSSION ON PAPERS OF DRS. CORWIN AND WEBSTER

Dr. Bevan: Mr. President and members of the North Side branch: I am very glad of having the opportunity of hearing Dr. Corwin's paper on medical education, and to have the opportunity of discussing this subject before the North Side branch. For several years this subject has been actively discussed and investigated by the Council on Medical Education of the A. M. A. and by the Committee on Education of the State Medical Society. I am very glad to see that here in Chicago a committee on medical education has been appointed in the County Society for the purpose of investigating and reporting on existing conditions and doing all in their power to elevate the standards of medical education.

All of the medical schools here in the state of Illinois are located in Chicago and it is peculiarly appropriate that these should be investigated by a committee of the Chicago Medical Society. In looking at this problem of medical education it is first necessary to determine how much education is required to convert a medical student into the finished product of a safe, well qualified practitioner, at least sufficiently qualified to warrant the state authorities licensing him to begin the practice of medicine. Modern medicine requires very thorough training. The amount of training has been answered by the experience of the older countries such as England, Germany and France, and a pretty general agreement has been arrived at. That agreement is that in order to begin the study of medicine a student should have in addition to a secondary school education a year's preparation in the study of physiology, chemistry and biology before he can begin the work of the medical subjects proper; then four years in the medical school and finally one year's clinical training as an intern in a hospital. I think that you will all agree with me that nothing short of this training fits a medical student sufficiently to warrant his beginning independent practice. None of you would recommend less than this amount of training to your sons or brothers or friends whose medical course you would supervise.

Therefore, assuming that we can secure this amount of training as a minimum requirement in the state of Illinois it should be done, first for the protection of the people of the state against ignorance and inefficiency, and in the second place such a minimum requirement would very distinctly elevate the entire profession of medicine in this state. Can we secure this minimum requirement at once? I think probably not, but I believe that it could be secured within a few years if there was earnest cooperation between the Chicago Medical Society, the Illinois State Medical Society, the State Board of Health and the colleges themselves. If all of these agents interested in better medical education would agree it would be a very easy matter to say that within three years the medical schools themselves and the State Board of Health would require this minimum preliminary requirement to the study of medicine, and we might agree that within four years no one graduating after that time could practice medicine in the state of Illinois without having had the year's clinical training in hospital work.

At the last legislature an amendment was passed to the medical practice act which makes it possible for the medical schools to make this clinical year compulsory. At the present time, apparently because of differences in medical politics it seems difficult to secure the cooperation of all of these agents to obtain the

desired result. When we are confronted with the great problems of medical education and public health we should say: "Away with medical politics," which interfere with our elevating medical standards and securing for the people of the state the value of the present day knowledge of preventive medicine. If we can secure the cooperation of all the best medical elements in the state, the medical schools, the county societies, the state society and especially the active, energetic support of the Chicago Medical Society, within three or four years we can place Illinois in the forefront in medical matters of the states of the Union.

Dr. Corwin, in closing: Mr. President and Gentlemen: The hour is very late and I shall not further claim your courtesy, though the subject is mightily important and there is much to say. I will simply refer to the excellent remarks of Dr. Bevan, Chairman of the A. M. A. Council, whose assurance of cooperation both publicly and privately expressed, is appreciated by the chairman of the local commission. He agrees with me that the interested forces must get together for a better understanding, and concentrate upon this and similar great public questions in which partisan medical politics should not be allowed to enter, as it did in the last report of the State Committee on Education, so detracting from the force of that report by dragging this great question in the mire of partisan strife, with which it had nothing to do, and we say with Dr. Bevan, "Away with such medical politics in this question."

Incidentally, I would like to talk about an hour on the question of politics. Bevan properly deplors it in this question where all should unite to boost who want to see the condition of medical training and medical practice improve. Let him not forget, however, that though we may radically differ as to the policy of running our medical societies, whether the few shall dominate or the many be encouraged to take an active hand, all factions can and should work together in pushing reform in medical education. He himself is a very active politician, and rightly so, for politics is from the Greek, *politês*, meaning citizen. Politics, citizenship activated, crystallized interest in affairs; religious affairs, ecclesiastical politics, often the hottest kind; public affairs, general politics; medical society affairs, medical politics. It is this kind of interest stirred up in Cook County Medical Society that has so increased her efficiency in the last few years. But like lawyers, or men on the football field, let us all learn to fight our partisan battles on clean principles and then strike hands with the winners in the interests of the whole profession, the weal of which is bigger than the success of individuals. The fact that Bevan and I are together and working on the square to help solve the problem of medical education shows that both of us have learned how to differ and fight each other hard in one direction and then line up on the same side for an honest fight in another.

THE VALUE OF LABORATORY ANALYSIS IN THE DIAGNOSIS OF DISEASE*

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Laboratory analysis as an important aid in diagnosis has been established as a necessity if the best work is to be done in the practice of medicine. I have little use for the man who considers the clinical side alone and ridicules the laboratory phase; on the other hand, I am not in sympathy with the extreme scientist who is not practical enough to correlate his findings with those of the clinical. I believe that the two should be combined.

My subject is a very broad one, so much so that I hardly know how to handle it or where to begin. Its extent is so great that I must of necessity talk at random. Consequently I will dwell on the significance

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of laboratory analysis to diseases, occasionally mentioning points in technic which I have found profitable, and all in all confining myself simply to points which appeal to me at this time, taking them up by systems.

A. RESPIRATORY TRACT

In the bacteriologic examination of the throat conditions, the question of diphtheria is the most important. I know of no field in bacteriology where personal equation plays a more important part than in the diagnosis of this condition. The Klebs-Loeffler organisms are oftentimes found in normal throats and so the question of local resistance is important. In securing a swab from the throat it is always best to do so from the edge of the membrane, as here the bacteria are the most active, for on the surface of the membrane are deposited most of the associated saprophytic organisms. However, as a rule, especially in struggling children, we cannot be so select in our choice. We are usually not able to make a diagnosis from the direct smear. Many men depend on the relative proportion of the cocci and bacilli in their probable diagnosis. If the latter are in the majority they consider it sufficient grounds for beginning antitoxin. Sometimes the morphology of the bacilli is so definite that we are able with a reasonable degree of certainty to make the diagnosis. In making a culture, blood-serum is the most useful, although agar-agar, potatoes, etc., may be deputed if necessary; but the growths are much slower and less characteristic.

On blood-serum the diphtheria organisms will grow more quickly than any other, manifesting themselves microscopically in six hours, and to the naked eye in the form of a growth in eight to ten hours. Consequently if we secure a bacillary growth in six hours on blood-serum, even though not presenting morphologic characteristics, we are sure of diphtheria. In the matter of stain, I always prefer Loeffler's methylene-blue. There are a number of differentiating stains recommended, but I have never been able to see any distinct advantage in any of them. Many times cultures are negative because antiseptics had been used shortly previous. Although the demonstration of diphtheria bacilli in association with clinical findings is conclusive evidence of diphtheria, yet the converse does not necessarily hold true. Even though the diphtheria organisms are not demonstrable, the clinical findings should take precedence because of the necessity of early treatment.

There is one condition of the throat which is often overlooked, and that is Vincent's angina. Clinically this presents a grayish membrane easily separated, leaving an ulcer, which emits a characteristic odor. This disease is due to the symbiosis of the *Bacillus fusiformis* and a spirillum which are almost invariably detected from direct smear.

In the examination of sputum the tubercle bacillus naturally first attracts our attention. So much depends on our statement that although the technic is exceedingly simple, yet we should use great care in the examination. The smear should always be permitted to dry in the air, for if heat is applied there are formed cracks which retain the carbol-fuchsin, and some of them being the size of tubercle bacilli, are sometimes mistaken for same. In the matter of counter stain, for several years I

have used a saturated aqueous solution of picric acid. The contrast between the dark red tubercle bacilli and the yellow background is a marked one. In fact the only things distinguishable are the tubercle bacilli, while the mucus, pus and all other organisms are combined in a yellow mass. There is only one disadvantage to the stain, and that is sometimes we are anxious to know the type of other organisms present, in which case methylene-blue stain is necessary; but the fault is overbalanced by the rapidity and ease with which the slide can be examined.

B. CIRCULATORY SYSTEM

In the examination of the blood I would first mention the leukocyte count. In my opinion the determination of the leukocyte count is one of the most necessary assets in the diagnosis of febrile diseases. Some infections give a leukopenia and others a leukocytosis. A simple way of remembering those diseases (which are six in number), which have a leukopenia, is by thinking of two G's, two M's and two T's, representing respectively German measles, la grippe, malaria, measles, typhoid and tuberculosis (uncomplicated). I will mention the most common infectious diseases, and the significance of the leukocyte count in each.

Typhoid Fever.—The most constant finding in this disease, when uncomplicated, is leukopenia ranging from 8,000 to 3,000. I have never seen a case of typhoid which did not show this characteristic, but conversely many times I have seen cases which presented practically all of the cardinal symptoms, but which later proved to be something else. I would never diagnose a case of typhoid in the absence of leukopenia, in spite of the fact that it presented all the typical symptoms and findings known, unless the typhoid bacillus was demonstrated in the blood. However, white corpuscles will increase in the face of complications, as perforation, hemorrhage, etc., but this is not always the case. Several times I have seen perforations in which the leukopenia persisted until death. But if leukocytosis does develop in the presence of abdominal findings, however slight, you have almost positive evidence of perforation and the outset of peritonitis. For example, I remember a case, some time since, which ran a white blood count of around 4,000 up to the third week, when early one morning he developed slight pains in the abdomen with a few other indefinite symptoms, to all of which ordinarily one would pay little or no attention. However, the leukocyte count gradually increased during the day, until late afternoon it was 12,000 with no physical findings of any note. A diagnosis of perforation was made which was corroborated at operation.

Pneumonia as a rule presents a leukocytosis ranging from 15,000 to 50,000. When I say pneumonia I am speaking of the ordinary lobar type due to the pneumococcus, in contrast to the influenzal and tubercular pneumonias which give leukopenia. There are times when lobar pneumonia will have a low leukocyte count, and this is spoken of in the textbooks as always indicating severe infection. However, this is not always the case, and I would modify their statement by saying that a low leukocyte count in pneumonia means either a very toxic condition or a very mild infection. Several times I have seen cases of the latter type in

which the clinical courses were mild and pneumococci obtained from the blood but gave a low leukocyte count.

In obscure cases of measles a leukocyte count will serve to differentiate it from scarlet fever, leukopenia being characteristic of the former and leukocytosis of the latter.

The Widal test in typhoid depends on the agglutinating properties of the blood and usually becomes manifest at the end of the first week, becoming more marked as the course progresses, and usually retaining that property for many years. Some cases show the reaction as early as the third day, while others may reach the other extreme and not manifest the reaction until convalescence, although this is rare.

Blood culture in bacteremias for the isolation of the infecting organism is a valuable aid especially in the early diagnosis of typhoid. As proportionately a larger amount of blood is necessary for the test, we usually introduce a needle into one of the superficial veins at the elbow, withdrawing from 5 to 20 c.c., mixing it thoroughly with the culture media, which we examine in twelve to twenty-four hours. The diseases in which we derive the most benefit by this are typhoid, pneumonia and septic conditions.

In typhoid it is the earliest positive diagnostic finding which we have at our command and the earlier in the course that we make the test in contrast to the Widal reaction, the more certain are we to isolate the organism. Positive results in the Widal test and the typhoid blood culture are both dependent on the same factor, namely, the agglutinating power of the blood, but they are at the opposite extremes. In the early part of the course when the agglutinating powers are absent or small, a positive typhoid culture is certain, but the farther the course progresses, the less liable is the blood culture to show, and the more likely the Widal to prove of benefit. And so we are fortunate in having at our command these two valuable tests with which we can determine the existence or absence of typhoid at any stage.

The examination of fresh blood microscopically is of great value in the diagnosis of malaria. I know of nothing so striking as the finding of these parasites with their dancing granules. There is nothing more definite and there is no mistaking them. Its field of usefulness is not so much in those cases which present the classical chills and fevers, as in those chronic malaria, where there may be entire absence of the above symptoms and nothing but an obscure picture. Stained blood smears are of great value to us, for examination of the blood elements and their differential counts. It is of paramount importance in the diagnosis of leukemias, anemias, trichiniasis, etc. The leukemias present as well as a high leukocytosis ranging around 200,000 to 400,000 great, relative increase in the number of lymphocytes and myelocytes depending on whether of the lymphatic or splenic myelogenous type. It is impossible to differentiate positively lymphatic leukemia with general adenopathy from Hodgkin's disease, without a blood examination.

Relative to pernicious anemia I wish to state that secondary anemias are commonly diagnosed pernicious anemia, when such is not the case. Because poikilocytosis and nucleated reds are present does not imply that

we have pernicious anemia, as any anemia of a severe type will show these findings. To diagnose pernicious anemia, in addition to the nucleated reds, and poikilocytes, the following characteristics must be present:

1. High color index.
2. Decreased coagulating power of blood.
3. Diminution of blood plaquetalets.

Incidentally there is only one other disease that will give a low number of blood plaquetalets, and that is purpura hemorrhagica. In all secondary anemias there is an increased number of blood plaquetalets. A peculiar thing about pernicious anemia is that there are not only marked variations in the clinical course, at times much improved, and again worse, but the blood picture shows corresponding changes. The nucleated reds appear at times in crops and in a few days may be few or absent. Among the conditions in which valuable information is secured from the blood pictures are the marked relative lymphocytosis in whooping-cough, the relative increase of the eosinophils as well as leukocytosis in trichiniasis, this often being necessary to differentiate it from typhoid, and the basophilic degeneration of the reds in chronic lead poisoning. I have not seen a case of lead poisoning where this condition was not present.

C. DIGESTIVE SYSTEM

Although gastric disturbances can frequently, with certainty, be recognized from clinical manifestations, laboratory examination is essential for precise diagnosis and a rational basis for treatment. Subjective symptoms and physical examination often prove deceptive where a stomach analysis would be of great benefit. Both the motor and secretory functions of the stomach may be recognized by chemical, macroscopic and microscopic examination of stomach contents. For this purpose test meals composed of definite quantities of solid and fluid are used, which are allowed to remain in the stomach a certain length of time. I cannot go into detail here concerning the principle and technic of the examination. Suffice it to say that the test meal in general use in this country is the "Ewald test meal," consisting of two slices of white bread and a glass of water, given on an empty stomach. In one hour the stomach is emptied and the contents examined. There are several points in technic which I would advise in stomach work.

1. It is wise to give two or three test meals in order to eliminate mistakes, for often we find that the nervousness and psychic effect in those not accustomed to the stomach-tube are sufficient to give slight variations in results.

2. Always be sure the stomach is empty before giving the meal, for in pyloric obstruction the stomach may be filled and the test meal would be useless. So a routine practice in preliminary evacuation and washing is preferable.

3. On the depth at which the stomach-tube is introduced often depends one's success in evacuating the stomach. The average distance from the teeth line to the stomach is 16 inches, but as a matter of fact most stomach-tubes are marked at 24 inches, with the result that the tube often curled on itself.

In the test meal we must pay attention to the following points, which I simply mention, as it would require too much time to qualify.

1. Amount nominally varies from 50 to 100 c.c.

2. Acids. Free hydrochloric varies from twenty to forty parts, total forty to sixty while combined, is the difference between the two. Lactic acid, and other organic acids, occur only in the absence of free hydrochloric acid. Associated with these are usually the so-called Oppler-Boas bacilli, which are almost pathognomonic of pyloric obstruction of malignant origin.

3. Sarcinae occur only in the presence of free hydrochloric acid with obstruction, and almost invariably mean benign obstruction, usually cicatricial from an old ulcer.

4. Occult blood, determined by chemical analysis, means ulceration from one cause or another.

5. Starch. Often mistaken for white cells. They are much larger and may be easily differentiated by adding iodine solution, which readily changes them to blue. Starch is present only with high amount of hydrochloric acid, which interferes with the ptyalin digestion.

6. Ferments. When free acid is present, rennin and pepsin are always present, and it is only when the acid is extremely low that we make the examination. Since it requires so long to examine for pepsin, for practical purposes we never do so, since the presence and quantity of milk-curdling ferment may be determined so easily. Depending on the amount of rennin present, we are usually able, in deficient secretion of the stomach to determine how much improvement in the secretion may be expected.

7. Mucus. Gastric mucus, unlike pharyngeal mucus, is intimately mixed with the food and is indicative of some form of gastritis.

Referring to specific conditions and their findings, I will also be brief.

1. Hyperchlorhydria. In this condition there is a large amount of stomach contents, food well digested and in solution, a marked acid odor and increase of hydrochloric acid. For practical purposes we consider all hyperchlorhydria cases not relieved of their symptoms in a few days under hyperchlorhydria treatment as gastric ulcer.

2. Gastric ulcer.

a. Marked increase in hydrochloric acid in 50 per cent. of the cases, normal amount in 40 per cent. and decreased amount in 10 per cent.

b. Blood may be present to the naked eye, microscopically or chemically. When present it is usually fresh.

c. Sarcinae when present are almost positive evidence of pyloric obstruction of benign origin.

3. Gastric carcinoma.

a. Usually small amount of fluid and large amount of food.

b. Decrease or absence of free hydrochloric acid.

c. Blood oftentimes present in the form of so-called "coffee ground" and also chemically.

d. Organic acids and Oppler-Boas, if obstruction present.

e. If pyloric obstruction is present with lactic acid and Oppler-Boas, it is positive evidence of malignancy.

4. Gastritis may be classified into acid gastritis, subacid gastritis and gastritis anacid, depending on the amount of hydrochloric acid present. Intimate mixing of mucus with the food is sufficient evidence for diagnosis of gastritis. For the diagnosis of achylia gastrica there must be absence of free hydrochloric acid, and ferments with low acidity. We must remember that six to twelve parts of the total acidity may be due to acid phosphates taken in with the food. I have seen two cases of chronic diarrhea without stomach symptoms, because of achylia gastrica due to the fact that food was not digested and absorbed well and was therefore a mechanical irritant to the intestines. Needless to say these could never have been diagnosed without stomach analysis.

Feces Examination.—I believe that most of us must plead more ignorance on this important subject than in any other field. Not enough attention is paid to it, the reasons for which are obvious. The examination should consist of macroscopic, microscopic and chemical. The color, consistency and ingredients are important. Alcoholic stools are characterized by their color, consistency and foul odor, and mean obstruction of the common duct; but sometimes similar appearing stools are passed by persons on a fatty diet. Tarry stools are quite significant of some severe hemorrhage in the small intestines. Typhoid hemorrhage stools rarely present a tarry appearance, but the blood is usually bright red. Stools, of course, may be black from various drugs.

Mucus in the stools is a variable factor at times, due to inflammatory process of different kinds, and on other occasions in the form of so-called mucous colitis occurring almost exclusively in nervous women. Gallstones, intestinal worms and parasites are, of course, significant. The locations of an ulcer can often be determined with more or less accuracy. If an ulcer is present in the region of the pylorus, and blood is found entirely in stool, and not in stomach contents, it is quite significant of duodenal ulcer. If chemical test for blood in stool is positive and red blood corpuscles show microscopically, the ulcers are probably low down, while if test is positive and no erythrocytes, the ulcer is probably high up.

Cancer of the stomach will cause a change in the stool from a normal Gram-negative stool to that of a Gram positive, due to the large numbers of Oppler-Boas bacilli. Some men claim that this finding is present in early gastric cancer, before stomach findings are evident.

Pancreatic disease is supposed to give characteristic stools but I am not in a position to say anything concerning them, for all the cases I have seen diagnosed pancreatic trouble did not prove to be so at operation.

Now concerning amebic dysentery. It has not been a great while since it was universally believed that this form of dysentery existed only in tropical countries. It is claimed by some authorities that the cases developing here are contracted from eating uncooked tropical fruits on which ameba are imported. Others assert that some cases develop from a bad water supply and state that the reason it is not such a scourge in this country as in the tropics is because the environment is not so suitable for the organism. As well as I remember, out of five cases which I have had of this condition, only two came from the tropical countries and they from the Philippines. The others had lived in Chicago and vicinity all

their lives. Ameba are easily secured from the rectum by passage of a rectal tube, but better still by using the proctoscope and curetting the ulcers. They are quickly recognized microscopically.

Relative to the hookworm I have had no experience.

D. BODY FLUIDS

The same principles that apply to one serous cavity apply to all. There is a basis for differentiating transudate from exudate which I will not go into here. In inflammatory conditions of the serous membranes, infecting organisms, with the exception of the tubercle bacilli, are usually easily detected. When bloody fluid is present it is almost invariably associated either with a tubercular or a carcinomatous condition. If chylous fluid is present, it is usually due to cancer of the upper abdominal cavity. In this fact I have been especially interested in that the few cases I have seen presented few symptoms of carcinoma. If, in an exudate, the lymphocytes are in excess, it is especially significant of a tubercular condition. This is due to the fact that in low grade inflammation only the lymphocytes are called out from the blood, while in acute condition the marked chemotaxis necessitates an excess of the polynuclears.

It is often necessary to examine the cerebrospinal fluid in cases of suspected skull fracture, meningitis, etc., for the purpose of diagnosis as well as treatment. Those few cases in which spinal puncture has proved fatal were mostly brain tumors, near the base, the sudden change in the intracranial pressure being too great. In the matter of technic we should pay particular attention to asepsis, marked flexion of the spine, in this way widening the interspaces between the vertebræ, and to the prevention as much as possible of traumatism. When having difficulty in entering the canal and striking the vertebræ, we are very liable to secure blood, and so we should beware and not confuse this with blood in the spinal canal. New punctures should be made in suspected hemorrhage.

When withdrawing the fluid, we should particularly note the pressure under which it runs out. The exercise of the Noguchi test or its modifications is of some service in the examination for inflammatory process. Examination of meningitis cases are of particular interest. In tubercular meningitis the tubercle bacilli may be found in 75 per cent. of the cases by placing the fluid in the ice box over night and examining the film which accumulates near the top. It is very necessary to determine the type of meningitis from the treatment standpoint, for Flexner's anti-meningococci serum has proved to be of as much value to epidemic meningitis as diphtheria antitoxin has to diphtheria. Under the daily aspiration and injection of the serum very interesting changes are always noticeable in the microscopic findings of the spinal fluid. If the lymphocytes are in excess before the injection of the serum, following that polynuclears increase; but after several injections and in the process of healing, they gradually disappear. The meningococci before the first injection are mostly extracellular, but following one or two injections they become mostly intracellulars and finally entirely so, so that it is often difficult to find the cells after serum injection. As they become intracellular they are being destroyed, and lose their morphology and staining characteristics.

ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF THE ILLINOIS STATE MEDICAL SOCIETY

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MARCH, 1912

EIGHTH ANNUAL CONFERENCE OF A. M. A. ON MEDICAL EDUCATION, MEDICAL LEGIS- LATION AND PUBLIC HEALTH; IMPORTANT MEETING

These conferences grow in interest and importance and the last session held February 26 and 27 at the Congress Hotel, Chicago, was probably more interesting and important than any of the previous sessions. Representatives were present from every state and Porto Rico.

THE FIRST DAY

Dr. A. D. Bevan presided the first day and gave an opening address. Dr. N. P. Colwell presented his report showing a gradual but healthy improvement in medical college conditions. Unfortunately Chicago, for reasons of which our readers are well aware, shows the least change.

The presence of Mr. Frederic G. Hallett of London, the executive officer of the conjoint Examining Boards of the Royal College of Physicians of London, and the Royal College of Surgeons of England, who gave a comprehensive statement of the methods employed in the examinations conducted by these venerable and highly honorable bodies, was one of the very attractive features of the meeting. Mr. Hallett, by means of charts and diagrams, showed that it was entirely feasible to apply the

practical tests on patients to all applicants for license to practice medicine and surgery. Several of the states of the Union are already applying these methods, and there is no good reason why all should not. Dr. Bevan stated that this could be readily done in Chicago.

Another address which was highly commended was that given by Prof. Reuben Peterson of Ann Arbor, on the Relation of Medical School to the Intern or Hospital Year. The extensive and interesting discussion of this paper by Drs. Murphy, Vaughan, Means, Lambert, Jackson, LeFevre and Dyer representing all sections of the country, was notable in that each and every one commended the magnificent work done and contemplated by the Michigan school, and the necessity of giving each graduate comprehensive and systematic course in hospitals. The hospitals must be brought up to a standard, and made to be something more than boarding houses for the sick. A resolution was adopted requesting the Council to make a systematic inspection of all hospitals with a view to their availability for intern instruction.

The last topic, a symposium on Medical Education in the State, was notable among other things for the frank acknowledgment on the part of one of the speakers, that the Carnegie Report on Medical Schools issued in 1910 was correct, and one of the most beneficial criticisms on the existing conditions that could have been made. He took occasion to emphasize the language of that report which declared Chicago the "rotten spot" of the medical education world. The reiteration of this statement was greeted with an applause which spoke louder than words.

THE SECOND DAY — MEDICAL LEGISLATION AND PUBLIC HEALTH

Dr. Henry B. Favill of Chicago presided and uttered an address which was quite remarkable, and led up to the most dramatic climax it has ever been our privilege to witness. Dr. Favill's remarks were to the effect that the activities of the profession in political matters had brought about considerable criticism from a portion of the public. We had been accused among other things of being "a professional trust"; of using "trade union methods"; of "abandoning our high ideals and stooping to political methods," etc., etc. Because of these disagreeable statements Dr. Favill thought it the part of wisdom to at once abandon our efforts along political lines and depend altogether on our efforts to educate the people. He further made the remarkable manifesto that this wise conclusion reached after long and exhaustive study of the subject, being the personal opinion of the chairman, could not be discussed. All present were amazed at the temerity of the chairman, and wondered what would be the effect of his pretention to infallibility in a matter so near to the heart of the profession and so important just at this time.

THE DRAMATIC CLIMAX

Scarcely had the chairman taken his seat ready to call for the next order of business when Dr. J. N. McCormack of Kentucky sprang to his feet, and in eloquent language called attention to the stand taken by the parent organization at the Los Angeles meeting. The representatives of the organized profession duly elected and clothed with plenary power

had pledged the organization at its annual meeting to a continuation of the contest which it had commenced, and instructed its committees and its journal to use their utmost endeavors to procure the passage of the Owen bill. If it should go out to the public that this conference, after all that had been said and done, had to-day taken a different stand, and should by its silence give consent to the doctrinaire sentiments of the chairman, a blow would be struck at the good faith of the profession from which it would never recover. Mr. Owen, who had taken his life and his political fortune in his hands in advocating our cause, would go down to a disgraceful defeat, and the blood of this sacrifice would be on our hands. McCormack said that he had just come from a contest in Kentucky, which showed the extremities to which the enemies of the profession would go to bring about his overthrow. Thanks to the united stand which the profession and the people of this state had taken, the enemy had been beaten horse, foot and dragoons. The effect of McCormack's eloquence was magical, applause punctuated his statements, and when he concluded the acclaim continued for several minutes. We have never seen anything like it on the floor of a medical meeting.

The supra climax came at 4:30 p. m., when a resolution pledging the active support of the profession to the Owen bill was passed by a unanimous vote of the members present. As our readers well know, this bill proposes the consolidation of the three existing bureaus into one central national board: (1) the Public Health and Marine-Hospital Service, now under the Treasury Department, (2) Vital Statistics, now in the Census Department, (3) Bureau of Chemistry, now in the Agricultural Department. Another resolution adopted calls for the formation of a national council on public health under auspices of the American Medical Association. The aim is to bring together annually or oftener all federal, state and municipal health officers for discussion of health and legislative subjects. Through such an organization, it is contended, health officials will be able to standardize and systematize their work and wage a united campaign for proper health legislation in nation, state and city. Congress was asked for financial support for the international congress of hygiene and demography at Washington in September.

The Council on Health and Public Instruction was asked to draft a model medical practice act as soon as possible.

A committee to investigate the status of vaccination and small-pox statistics and to prepare a model bill on vaccination for introduction in legislatures of all states will be formed.

A committee to consider changes and modifications of the present model law on registration of vital statistics will be formed.

Establishment of a pure food and drugs board of examiners in every state was advocated by E. F. Ladd, state commissioner of foods and drugs of North Dakota, in an address.

There should be a board in every state to pass on patent or proprietary products coming on the market, he said. "When a product was found to be a fake no license for its sale should be granted; of if the advertising or descriptive matter were false or misleading — either that accom-

paying the product or as published through the press—then the license for the sale of this product should be revoked.” Commissioner Ladd urged an agitation for the enactment of a general merchandise marks act, making it an offense for any manufacturer to sell any manufactured product under a false label.

Dr. J. W. Pettit, superintendent of the Ottawa tent colony, outlined a program against tuberculosis.

ILLINOIS MEDICAL EDUCATIONAL CONDITIONS

By J. F. PERCY, M.D.

Matters of legislation, as they affect the profession and people of Illinois along medical lines, are in a state of unrest. This, also, is preeminently true of medical education in Illinois. The Council of the Illinois State Medical Society, in October of last year, called a meeting of 100 at the La Salle Hotel, to consider the problems connected with medical education in the state. This committee authorized the formation of a subcommittee of five, which is now actively at work. The committee of 100 was a result of the report of the committee on medical education of the Illinois State Medical Society which was given at Aurora last June. The feature of this report was the severe arraignment of the dishonest educational methods of the low-grade medical schools of Chicago.

The present Chicago Medical Society bitterly censured this report and resented its conclusions; but recently has been forced to recognize its accuracy. This has been done by the organization of a committee known as the Chicago Medical Society Council Commission on Medical Education to “aid all sane efforts to solve the problems and improve the conditions of medical training in this state.” This work, however, was not actively taken up by the Chicago Medical Society until the states contiguous to Illinois began to quarantine, educationally, against its low-grade medical schools. The people of Illinois and the medical profession in this state are both alike greatly indebted to these sister states of Ohio, Wisconsin, Indiana and Iowa, not to mention some of the states further west, for the help derived in our fight against state board of health inefficiency and medical educational ostracism, which have existed in this state for years. The refusal to recognize Illinois licenses, or its methods of medical education, by the surrounding states, is undoubtedly responsible for what seems to be a reasonable promise that the present Illinois State Board of Health is soon to be reorganized on modern lines. Unfortunately, the exigencies of politics, and not altogether the good of the people or that of the profession in the state, seem to have been among the determining factors in this slow response to the demand for better conditions in medical education in Illinois. The political support derived from those interested in and associated with the under-grade medical schools of Chicago, aided by the apathy of the medical profession in Chicago, have made possible the continued existence of the Illinois State Board of Health as at present constituted.

NEW SECTION OF THE ILLINOIS STATE MEDICAL SOCIETY

On the initiative of several specialists in Chicago, a movement has been started which will undoubtedly result in the formation of another section of the State Society devoted to consideration of diseases of the eye, ear, nose and throat. For a number of years the State Society has endeavored to have all papers offered at the annual meeting read before the entire organization, with the result that those devoting their time to well-defined specialties have seen themselves legislated out of existence. Undoubtedly the time has come when more consideration should be given to those gentlemen working along special lines. We therefore welcome the movement which has been started, and heartily applaud the action of President Newcomb, in appointing Dr. W. O. Nance of Chicago temporary chairman, and Dr. George F. Suker secretary of the new section. Dr. Suker writes us that he has had an enthusiastic response from every gentleman he has approached, and appears to have about sixteen papers for the coming meeting of the State Society in May. The clinics will precede or follow the day devoted to the reading of papers. The program will appear in the April number of *THE JOURNAL*, and any of our members devoting time and attention to diseases of this character will no doubt be welcomed to become members of this section and to participate in the program.

The following gentlemen have been heard from in response to the circular letter sent out by Dr. Suker: Oliver Tydings, W. L. Ballenger, John Loring, Edward Pynchon, Paul Guilford, H. M. Lebensohn, William Fisher, Thomas Faith, William Gamble, C. W. Boot, Willis O. Nance, Otto J. Stern, Charles M. Robertson, Richard J. Tivnen, Casey A. Wood, Frank Allport, Frank Brawley, A. H. Andrews and George A. Suker of Chicago; L. Ostrom, Rock Island; J. Whitefield Smith, Bloomington; Anna L. Zorger, Champaign; A. E. Prince, E. E. Hagler, A. L. Hagler, and R. J. Bullard, Springfield; F. A. Guthrie, La Salle; Don A. Vanderhoff, Rockford; A. M. Earl, Hoopeston; C. B. Voight, Mattoon; E. H. Bradley, W. C. Williams and C. B. Welton, Peoria; A. E. Sherman, Aurora; W. J. Rideout, Freeport; A. E. Middleton, Pontiac; C. F. Burkhardt, Effingham; R. C. Matheny, Galesburg; and others.

SURVEY OF THE STATE BY THE WOMEN'S CLUBS

The Illinois Federation of Women's Clubs, working in concert with the American Medical Association, we understand will very soon undertake the work of searching every township and ward of the state to discover and report on the number of cases of tuberculosis existing at this time, the surroundings under which they live and the care which they are receiving. The committee having active charge of this work are Dr. Mary G. McEwen of 1703 Chicago Avenue, Evanston; Dr. Josephine Milligan of Jacksonville, and other members of the federation who are also members of the medical profession. The large number of

women's clubs in the state covering nearly every county, will give this survey a distinct value. For obvious reasons they will be obliged to depend on the members of the medical profession to lend a helping hand. The committee of ladies not physicians, naturally will only learn of severe cases, and will probably overlook the milder cases and the surgical infections unless they receive the careful and intelligent aid of the medical profession.

We therefore bespeak for them the consideration of our members which the immense and important task deserves. When our people are once made aware of the prevalence and destructiveness of the white plague they will lend a helping hand to terminate its ravages. The women's clubs will be of very great assistance in every step of the contest.

IOWA BOARD SEVERS RELATIONS WITH ILLINOIS

(COPY OF NOTICE ISSUED BY THE IOWA BOARD)

DES MOINES, Jan. 29, 1912.

RECIPROCITY WITH ILLINOIS

In severing relations with the Illinois State Board of Health as regards reciprocal relations, the Iowa State Board of Medical Examiners has undertaken to examine into the methods of instruction, together with capacity for instruction and such other methods as might be legitimately required of medical colleges, of all medical colleges or institutions whose diplomas are to be presented to the Iowa State Board of Medical Examiners for the purpose of taking the Iowa examinations. A committee from the Iowa State Board of Medical Examiners visited all such institutions in the city of Chicago and in its report recommended that Rush Medical College, College of Physicians and Surgeons, Northwestern University Medical School, Hahnemann Medical School and Bennett Medical School be the only schools in Chicago whose diplomas would be recognized by the Iowa State Board of Medical Examiners, and that diplomas from these schools would not be recognized from graduates who entered after Jan. 1, 1911, unless said graduates had had a four years' course in an accredited high school, together with two years of liberal arts in an accredited college. All of these requirements are found enumerated on pages 7 and 8 of the Circular of Information containing the rules and regulations of the Iowa State Board of Medical Examiners. For this reason and this reason alone reciprocal relations have been withdrawn.

(Signed) GUILFORD H. SUMNER, Secretary.

AN EVEN BREAK

In commenting on the elevation to knighthood of two British "patent medicine" exploiters by King George *The Journal A. M. A.* (Feb. 3, 1912, p. 351) says: "The occasion seems one that is pregnant with opportunities for sarcastic comment, at the expense of royalty and monarchical

governments. But then we unwillingly remember that genial personage whose relationship to the Duffy's Malt Whiskey outfit and the canning company that sold short-weight products has often been the subject of comment—the gentleman whom a free people elected to the second highest office it has to give, namely, the vice-presidency of the United States." Inasmuch as one vice-president may not be considered the equal of two British knights, it may be well to remind our readers that, at the present writing, there is at the head of the Chicago school system one who promotes an "eye water" and runs an "alleged college of ophthalmology" for a side line. We refer to James B. McFatrigh, M.S., M.D., president of the Chicago board of education, a high official in the Masonic Order, president of the Murine Eye Remedy Co., and president of the "Northern Illinois College of Ophthalmology and Otology." Should our Chicago readers wish to learn more regarding the person who is in control of their children's education, or the eye water which is not the one that Colonel Sellers was interested in but one whose exploitation should prove and seems equally profitable, we refer them to a discussion of this matter which appeared in *The Journal A. M. A.*, Nov. 7, 1908, p. 1614.

BULLETIN OF SANGAMON COUNTY MEDICAL SOCIETY

Following the lead of many other county societies in the state, the officers of the Sangamon County Society, recently elected, have commenced the publication of a monthly bulletin containing the program, news items and other matters of interest calculated to build up the society and make it more efficient. The expense of publication of the bulletin will be more than met by the twenty-four advertisements of the local firms contributing to its support.

THE LEAGUE FOR MEDICAL FREEDOM AT ROCKFORD

The League, carrying out its program of public meetings in the state, held a meeting recently at Champaign, which was attended by about 200 people. Mr. Mason, we understand, attempted to have a well-known member of the newspaper fraternity preside at the meeting, but failed.

The meeting which was held at Rockford was attended by a small number of people as at other places. The Rockford daily newspaper contained the following letter from Dr. H. A. Pattison, expressing in vigorous language the views of our profession on this matter, which we publish herewith:

DOCTOR EXPRESSES VIEWS

While most of the physicians of the city were in session at the Nelson house studying the best methods of combating the most fatal disease in our midst, pneumonia, and discussing the possible source of the epidemic now imminent, Dr. L. P. Crutcher was trying with all his energy to gather enemies to fight the American Medical Association and the Owen bill now pending in congress, which was framed to conserve the health of the people.

Because the average layman is unacquainted with the facts it is quite possible that the sophisms in Mendelssohn hall may be accepted as true. As stated in *The Star* yesterday morning, Dr. Crutcher claims to have read the Owen bill from coast to coast in every one of his addresses, but he did not read it to the small Rockford audience which greeted him. Every citizen should read that bill and see if he can possibly read into it any of the portentous things the National League for Medical Freedom claims it contains.

This bill, which is being supported by the American Medical Association, is also being vigorously supported by the committee of one hundred of the National Association for the Advancement of Science, composed of the leading scientists of America. Among the leaders of the American Medical Association charged by the League for Medical Freedom as being political bosses are these: John B. Murphy, president and world famous surgeon; Abraham Jacobi, for half a century a scientist educator and philanthropist; George H. Simmons, general manager and editor of *The Journal* of the American Medical Association, who has done more than any American has ever done to expose fraudulent patent medicine and fake cures and incur the enmity of their proprietors. William A. Pusey, treasurer, a skin specialist of Chicago, with a world-wide reputation in his field. Frank Billings, consulting physician and medical educator. M. L. Haris, well known Chicago surgeon. W. T. Councilman, professor of pathology of the Harvard university. Alexander Lambert, medical educator of New York City. J. N. McCormick, health expert and medical expert. These are the men whom Dr. Crutcher would have the public believe are political bosses.

Among the officers of the National League for Medical Freedom are these gentlemen; and the public is free to decide which of these groups is most interested in conserving the public health: They are Charles Wentworth Littlefield, mail order advertising quack of Seattle; B. O. Flower, president and founder of this league, is president of the R. C. Flower Medicine company, a mail order medical fake founded by the notorious quack and swindler, R. C. Flower; C. S. Carr, M.D., who has been in the employ of the Peruna company for years and does a mail order medical business of his own; Charles Huhn, ex-president of a cooperative patent medicine concern, known as the American Druggists' syndicate; A. F. Stevens, M.D., formerly with the Converse Chemical company, a St. Louis Nostrum concern, which offered to give away one share of stock with every bottle of its products.

The American Medical Association is in no way attempting to take from the people their inalienable right to employ in the hour of illness the practitioner of the system of healing of their choice. Nor are they attempting in any way to secure a monopoly of the healing art or through the Owen bill to extend the federal power so as to infringe upon the right of a state to regulate and control its own health affairs.

The association is trying to advance public health: (1) by exposing fraudulent patent proprietary medicines with false labels and deceptive literature; (2) by driving out of business quack doctors who prey upon the sufferings of their fellows; (3) by securing the passage of the Owen bill that sanitary science and personal and public hygiene may be more widely taught and scientific research be more thoroughly prosecuted; (4) by doing everything possible to raise the standards of medical education and close the doors of "diploma mills."

These it seems to me are objects to which every honest progressive person may give his approval.

Very truly yours,

H. A. PATTISON, M.D.

Correspondence

EXAMINATION FOR ASSISTANT SURGEONS

TREASURY DEPARTMENT

Bureau of Public Health and Marine-Hospital Service

WASHINGTON, Jan. 30, 1912.

A board of commissioned medical officers will be convened to meet at the Bureau of Public Health and Marine-Hospital Service, 3 B Street, S. E., Washington, D. C., Monday, April, 8, 1912, at 10 o'clock a. m., for the purpose of examining candidates for admission to the grade of assistant surgeon in the Public Health and Marine-Hospital Service.

Candidates must be between 22 and 30 years of age, graduates of a reputable medical college, and must furnish testimonials from responsible persons as to their professional and moral character.

The following is the usual order of the examinations: (1) physical; (2) oral; (3) written; (4) clinical.

In addition to the physical examination, candidates are required to certify that they believe themselves free from any ailment which would disqualify them for service in any climate.

The examinations are chiefly in writing, and begin with a short autobiography of the candidate. The remainder of the written exercise consists in examination of the various branches of medicine, surgery and hygiene.

The oral examination includes subjects of preliminary education, history, literature and natural sciences.

The clinical examination is conducted at a hospital, and when practicable, candidates are required to perform surgical operations on a cadaver.

Successful candidates will be numbered according to their attainments on examination, and will be commissioned in the same order as vacancies occur.

On appointment the young officers are, as a rule, first assigned to duty at one of the large hospitals, as at Boston, New York, New Orleans, Chicago or San Francisco.

After four years' service, assistant surgeons are entitled to examination for promotion to the grade of passed assistant surgeon.

Promotion to the grade of surgeon is made according to seniority and after due examination, as vacancies occur in that grade.

Assistant surgeons receive \$1,600, passed assistant surgeons \$2,000, and surgeons \$2,500 a year. When quarters are not provided, commutation at the rate of \$30, \$40 and \$50 a month, according to grade, is allowed.

All grades above that of assistant surgeon receive longevity pay, 10 per cent. in addition to the regular salary for every five years' service up to 40 per cent. after twenty years' service.

The tenure of office is permanent. Officers traveling under orders are allowed actual expenses.

For further information, or for invitation to appear before the board of examiners, address "Surgeon-General, Public Health and Marine-Hospital Service, Washington, D. C."

THE IMMORTALS

Feb. 21, 1912.

To the Editor:—I read your list of twenty immortals in the last number of the State JOURNAL, and I wondered if Semmelweiss, the discoverer of the cause of childbed fever, does not deserve a place in that list. Semmelweiss clearly indicated the true explanation of puerperal infection, and also of all forms of surgical infection, including surgical pyemia, and he pointed out in unmistakable terms the methods for the prevention of infection. He described much more definitely than Lister the source, the origin, and the methods of prevention, of all kinds of wound infections.

With best regards, I am

Yours truly,

J. B. DE LEE.

CHAMPAIGN, ILL., Feb. 29, 1912.

To the Editor:—I was greatly interested in your list of twenty of the greatest names in medicine prior to the twentieth century, which appeared in the February JOURNAL. Every individual in your list is certainly entitled to a high niche in the temple of fame, but I can not but express my surprise at some names you failed to include. Among these I name Vesalius (1514-1564), who at very great personal risk made investigations and prosecuted work that conferred on him the title "Father of Anatomy;" Robert Koch (1843-1910), who discovered the tubercle bacillus, also the cholera bacillus, and who, next to Pasteur, did most to make practical the science of bacteriology; Dr. Walter Reed, head of the Commission that discovered the cause of yellow fever and made practical the prevention of this disease which at times had hitherto prevailed as a veritable scourge in tropical and semi-tropical America.

With good wishes,

CHAS. B. JOHNSON.

MR. STRAUS ISSUES A CHALLENGE

27 WEST SEVENTY-SECOND STREET
NEW YORK, Jan. 31, 1912.

To the Editor: In the efforts that are being made to protect the babies from milk-borne diseases such as tuberculosis, typhoid and scarlet fevers, diphtheria, sore throat and summer complaint, the well-considered policy of the Public Health Service and of the foremost health officers of the country is seriously hindered by attacks based on ignorance.

The statement is repeated with assurance, without proof, that the use of pasteurized milk causes rickets, scurvy and anemia. People are scared by these outcries into exposing their babies to infectious diseases, and the lives of helpless little ones are forfeit.

It does not undo the harm by showing that the Public Health Service, after exhaustive investigation, declared that "pasteurization prevents much sickness and saves many lives," and proved that the process does not impair the taste, digestibility or nutritive qualities of the milk.

It does not protect the babies from reckless misrepresentation for me to point out that in feeding 25,000 babies with pasteurized milk through my infant milk depots in New York City alone, never has one case of scurvy or rickets developed. Nor does it still the voice of mischief to cite the experience of Dr. Variot, in Paris, who fed 13,000 babies on sterilized milk without causing these diseases.

Several years ago, when a famous physician who opposes antitoxin and vaccination raised this cry of scurvy and rickets, I publicly challenged him to produce one case caused by pasteurized milk, and he subsided.

But the mischief of this warfare on the babies goes on, and many lives are sacrificed. If it could be known how many babies perish through their parents being misled by such statements made through recklessness or ignorance, editors would close their columns to such outbursts as they generally do to the tirades of fanatics who oppose vaccination.

In order to bring this issue to an end, I offer through you \$1,000 for any case of scurvy or rickets or anemia caused by feeding a baby with properly pasteurized milk.

If any such case is alleged in answer to this challenge, I will leave the determination of the facts to Dr. Rupert Blue, Surgeon General; Dr. M. J. Rosenau, Professor of Hygiene and Preventive Medicine at Harvard, and Dr. John F. Anderson, director of the Hygienic Laboratory at Washington, or any jury that they may choose.

Very sincerely yours,

NATHAN STRAUS.

ILLEGAL PRACTITIONERS AND STATE BOARD OF HEALTH

Dr. J. A. EGAN, Springfield, Ill.

Dear Doctor:—I found your letter on my desk after my return from a trip to Philadelphia. Since my last letter I have seen copies of some interesting correspondence between yourself and Dr. Brooks and Dr. Buckmaster. It is very evident that the feeling of the Peoria City Medical Society is shared by a good many of the other societies through the state. There is no doubt that you have not given the profession of this state the support that you should have in getting rid of illegal practitioners. You have been a good deal more energetic in finding excuses to keep from prosecuting than you have in the actual prosecution. You seem to

be very prolific with reasons why a prosecution cannot be carried on successfully. Now, if you would show the same energy in devising ways and means for getting at these evils and in assisting the local society in the prosecution of them, there would not be so much room to find fault.

Your attitude regarding legislation is in harmony with your attitude regarding the prosecution of illegal practitioners. While the medical profession of this state believes that there should be one entry to the practice of medicine, and that requiring them to go through a four years' training and an examination before allowing them to practice medicine and to allow others to practice medicine with a great deal less training, is unfair, you sit in your office and twirl your thumbs and say that any attempt to make one entry or one set of requirements for the practice of medicine is an Utopian dream. Why do you not aid the practitioners of medicine in the prosecution of illegal practitioners, and why do you not aid the practitioners in getting rid of unfair competition by way of legislation instead of hunting around for expedients to obstruct their efforts? Instead of that you make out a case of *lese majeste* against any practitioner who presumes to criticize the State Board of Health or its secretary in any way, and subject him to the penalty of a bulky letter from the secretary in case he dares voice a criticizing opinion.

As regards the name and number of the bill which I said was supported by the State Medical Society, and to which I intimated that you had changed your attitude from one of support to one of opposition almost in a single night, I am confident that you know more about the number and name of that bill than I do. You also remember the occurrence. You also remember that you were very loath to have the duties of the State Board of Health divided because, forsooth, there would be two or three boards and consequently two or three secretaries. Of course, your opposition to the proposed change arose from a dislike to have your duties lessened and the amount of your work curtailed. Of course, the opportunity for power and influence by being virtually Secretary of the Board of Health and Board of Registration and Board of Embalmers, did not influence you to oppose the bill that was being advocated before the legislature by the legislative committee of the State Medical Society. If Governor Yates at that time had listened to the wishes of the medical profession instead of rudely and summarily turning them down, his further career might have been different.

Now, my dear Dr. Egan, the reports from Effingham and Fayette counties are very similar to the report from Peoria County. I have talked with members of the profession from Fulton County, and the same feeling is prevalent there, and I have heard the same feeling of lack of confidence in the sincerity of the Secretary in prosecuting illegal practitioners expressed by the members of the profession from all over the state, all of which illustrates the saying of a good and wise man who knew what he was talking about when he said: "You cannot fool all the people all the time."

As far as I am concerned, this is the end of our correspondence on this subject. I did not initiate it, so I will take the privilege of closing it.

Yours truly,

Nov. 20, 1911.

CLIFFORD U. COLLINS.

ILLINOIS FEDERATION OF WOMEN'S CLUBS

1703 CHICAGO AVENUE, EVANSTON

Feb. 23, 1912.

To the Editor:—At the request of the Illinois Society for the Prevention of Tuberculosis, the Illinois Federation of Women's Clubs will make a tuberculosis survey of the state this year. The canvass will be made by members of the various women's clubs. From the nature of the task, these workers will need the assistance of the physicians in their districts. May I, through your columns, appeal to the profession of Illinois to give this effort their cordial support and assistance?

The data collected will be made a matter of record, and for this purpose cards have been furnished by the Tuberculosis Society. When completed, this tuberculosis survey will be the first ever made of an entire state.

In addition to the statistics compiled by the club workers, the interest in the subject which will be aroused in the women of Illinois will materially aid in the fight against tuberculosis. MARY G. McEWEN,

Chairman of the Public Health Department of the I. F. W. C.

NEW AND NONOFFICIAL REMEDIES

Since publication of New and Nonofficial Remedies, 1912, the following articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion with "New and Nonofficial Remedies:"

LACTIC BACILLARY TABLETS-FAIRCHILD are made from a practically pure culture of the *Bacillus bulgaricus*. They are designed for internal administration in the treatment of intestinal fermentative diseases by the Bulgarian bacilli, with the design of accomplishing the acclimation of the bacilli in the alimentary tract, so as to secure their characteristic action against putrefactive fermentation by the production of lactic acid. One or two tablets before or after meals. The diet should not contain an excess of proteid, but should afford sufficient sugar. Fairchild Bros. & Foster, New York (*Jour. A. M. A.*, Jan. 20, 1912, p. 191).

SALVARSAN (arsenphenol-amin hydrochloride, arseno-benzol, "606") is 3-diamino-4-dihydroxy-1-arseno-benzene hydrochloride, $\text{HCl} \cdot \text{NH}_2 \cdot \text{OH} \cdot \text{C}_6\text{H}_3\text{As} : \text{As} \cdot \text{C}_5\text{H}_4 \cdot \text{OH} \cdot \text{NH}_2 \cdot \text{HCl} + 2\text{H}_2\text{O}$, corresponding to 31.57 per cent. arsenic (As). It is marketed in hermetically sealed tubes each containing 0.6 gm. (10 grains) salvarsan. Salvarsan is a yellow, crystalline, hygroscopic powder, very unstable in air. It is readily soluble in water, yield-

ing a solution with an acid reaction. The addition of sodium hydroxid solution to an aqueous solution of salvarsan precipitates the free base ($\text{NH}_2\text{OH} \cdot \text{C}_6\text{H}_5\text{As} : \text{As} \cdot \text{C}_6\text{H}_5\text{OH} \cdot \text{NH}_2$) which redissolves when more alkali is added.

It is given to adults in doses of 0.3 to 0.6 gm. (5 to 10 grains); for children the dose is from 0.2 to 0.3 gm. (3 to 5 grains). In infants doses of from 0.02 to 0.1 gm. ($\frac{1}{3}$ to $1\frac{1}{2}$ grains) may be used. For a subcutaneous and intramuscular injection a suspension in a neutral fluid is commonly employed. This suspension is prepared as follows: The weighed amount of salvarsan is triturated with 0.35 c.c. normal sodium hydroxid solution to each 0.1 gm. salvarsan. To this liquid a solution of 0.1 c.c. of normal sodium hydroxid solution for each 0.1 gm. of salvarsan in 8 c.c. of sterile water is added drop by drop until the liquid is exactly neutral to litmus paper. If the neutral point is passed the excess of alkali must be carefully neutralized by a weak solution of hydrochloric or acetic acid. Subcutaneously, salvarsan may also be administered in form of oily suspensions.

These suspensions should be injected at once, using a syringe with a very thick platinum needle.

For intravenous injection a clear alkaline solution is prepared as follows: The weighed quantity of salvarsan is triturated with 0.7 c.c. normal sodium hydroxid solution for each 0.1 gm. of salvarsan and then more of the alkaline solution is cautiously added until complete solution occurs.

This solution is diluted with from 100 to 250 c.c. (3 to 8 ounces) of sterile physiologic salt solution (0.9 per cent.) and filtered through a sterile filter.

The contents of a tube should be used at once after opening and under no circumstances should the contents of a tube damaged in transportation or any remnants of the powder from previously opened tubes be used. Victor Koechl & Co. (*Jour. A. M. A.*, Jan. 20, 1912, p. 191).

WHAT ABOUT THE CHICAGO MEDICAL SCHOOLS? SOME PERTINENT QUESTIONS

CHICAGO, Feb. 25, 1912.

To the Editor:—In regard to those second grade schools teaching medicine which in many respects were found to be operating against the laws of the State Board, as regards their preliminary requirements, curriculum, etc. I would like to have you answer the following questions in your journal, of which I have been a constant reader:

1. Has anything been done by the State Board to force schools of so-called "B" and "C" groups of Chicago to raise or comply with its requirements to the fullest extent, and if not, are these things going to continue?

[ANSWER.—Apparently nothing has been done and the condition seems certain to continue as long as the present secretary holds office.]

2. Are the various states which Illinois reciprocates with or did, are they going to all break away from this mutual agreement gradually, and not recognize the state of Illinois, which contains the metropolitan city — Chicago — of this section, just because her requirements are not of equal standard? Although two of her schools are, do they have to suffer because of the wrongs of the others?

[ANSWER.—A number of states have withdrawn from reciprocity with Illinois. Others will withdraw. Several states permit the graduates of the high grade schools of Chicago to enter their examinations.]

3. Do you think they ought to allow a night medical school to operate here, when it is the only state in the country which permits it?

[ANSWER.—The night school should not be permitted in any state.]

4. Do the neighboring states in which some of the universities of Chicago have also medical schools, giving the first two years there, do these states recognize those two years of work to their fullest extent?

[ANSWER.—We cannot answer this question.]

Thanking you for same, I remain

Yours respectfully,

JOHN BURKE,
Cicero, Ill.

JOSEPH LISTER

In our list of immortals published in the February JOURNAL we appropriately placed the name of Lord Lister, who was yet living when the list was first made out. We deemed it wise to exalt his name and character even before his death, and now that he has passed to his reward there are absolutely no reasons why the remarkable achievements of this well-known man should not be recorded for the benefit of the medical profession and the world. We had the pleasure of attending the clinics of Lord Lister at the University College Hospital at London in 1886. Undoubtedly the fact that when we registered our card identified us with Lincoln's old home led Lord Lister when, during the course of the clinic he mentioned the opposition he had encountered in promulgating his doctrines, he concluded these remarks by stating that, like Lincoln, "he would have to keep pegging away." There were several analogies in the careers of Lincoln and Lister. Both of them sprang from the common people, and reached the highest places in their respective nations and professions by the force of individual effort. Both were possessed of minds of remarkable strength, and both were personally modest and lovable. Mr. Lister was more fortunate than Lincoln in that he lived to see the full consummation of the wonderful discovery made by him, and to receive the acclaim of the whole world for his beneficence. Lord Lister's fame is secure, he has a large place in the heart of the world because through him the method of healing has been made highly effective. Even in our era the triumphs of aseptic surgery may well be accounted as miraculous.

COUNTY AND DISTRICT SOCIETIES

ADAMS COUNTY

The Adams County Medical Society met in regular session on Monday, February 12, at the Elk's Club Rooms, Quincy, Ill. The president being absent a chairman was elected in the person of Dr. T. B. Knox, the former president. Those in attendance were Drs. Nickerson, Wells, Center, Reiffert, Ball, Beirne, Stine, Nichols, W. E. Mercer, Montgomery, Schullian, Groves, Mitchell, Zimmerman, Blikman, Pearce, Collins, Bates, Spence, Ruth, Christie, Gabriel, Williams, Lierle, K. Shawgo, Whitlock, Bloomer, Haxel, Knapheide.

After the reading of the minutes and the discussion of other important business matters the society adjourned for luncheon to the Hotel Quincy. Reassembling in the afternoon the honored guest of the day, Dr. W. K. Newcomb of Champaign, President of the State Society, addressed the members on "Plea for the Preservation of the Principles of Medical Ethics." It was both a very practical and interesting subject and one about which we as physicians are very apt to become careless and negligent.

Each and every member present enjoyed this paper, and thanked the president for reviving and renewing these principles in their minds. To show the appreciation felt, the secretary was ordered to place the name of Dr. Newcomb on the roll of honorary membership. Dr. J. E. Miller was elected to regular membership in the society. On motion meeting adjourned.

CLARK COUNTY

The Clark County Medical Society met at Casey, Jan. 11, 1912, at 1 p. m. Members present: Drs. Mitchell, S. W. Weir, McCullough, Johnson, Boyd, S. C. Bradley and Rowland. Visitors present: Drs. P. P. Haslitt, S. A. Smith, W. H. Stoltz, C. M. Harris, Wallace Young and Councilor Dr. E. B. Cooley of Danville, Ill. Minutes of the previous meeting were read and it was moved and seconded that the amendments, as recommended to the State Society By-Laws by Drs. Black, Zurawski and Coleman and voted upon at our last meeting, be rescinded. Motion carried; then previous minutes were approved.

The resolution relative to members of local medical society becoming *ipso facto* members of the A. M. A., were discussed and upon motion duly seconded, the Clark County Medical Society voted unanimously to oppose them. Moved and seconded that the application of Dr. E. E. Edmonson be laid on the table. Motion carried. Moved and seconded that the secretary-treasurer draw on funds of society sufficient amount to have some blank applications printed. Motion carried.

The applications of Dr. P. P. Haslitt of Marshall and Dr. S. A. Smith of West Union were presented and upon motion and second the rules of the society were suspended and the doctors elected to membership at once. Moved and seconded that all papers read at our meeting be sent to ILLINOIS MEDICAL JOURNAL, to be printed with the reports of said meetings and to begin with this meeting. Motion carried. Moved and seconded that amendments of Black, Zurawski and Coleman be voted upon at our next meeting. Carried.

Among the clinical cases reported were: A case of chronic appendicitis, with an acute exacerbation; pulse 120, temperature 98, abdomen rigid; treatment, very little by mouth, fed per rectum; morphin hypodermically, if necessary for pain; suggestion, continue treatment, except nothing by mouth, for few days.

Case, syphilis fifteen years ago; treatment at times since but none during last six years; patient alcoholic at present; three mucous patches in mouth;

glaucoma several years, now totally blind. Doctor asked to use 606, but refused to do it. At present is giving K. I. and mercury and leaves off alcohol. All who commented on the case thought it dangerous to use 606 in such a case, but considered it more effective in more acute cases.

Case of tetanus, from weed in hand; nothing used at first, later used anti-tetanic serum which seemed to relieve a few minutes at a time. Altogether used 36,000 units, but the patient died. Patient complained as though wrist was sprained. Suggestion: morphin in large enough doses to control spasms at least. Used it in two cases which got well.

Case of chorea, dating from ptomain poisoning. Resisted all regular treatment, such as Fowler's solution. Finally used twelve drops anhydrous arsenate of soda 5 per cent. solution hypodermic, five doses, five days apart and patient commenced to recover at once and gradually recovered completely.

Paper by Dr. J. Y. McCullough on "Diseases of Heart and Blood Vessels," which was good and appreciated by all present.

Moved and seconded that we adjourn to meet April 13, 1912, at Marshall.
Motion carried.

S. W. WEIR, Secretary-Treasurer.

COOK COUNTY

CHICAGO MEDICAL SOCIETY

Regular Meeting, Dec. 20, 1911

The Chicago Medical Society held a regular meeting, Dec. 20, 1911, with the president, Dr. J. M. Patton, in the chair. Dr. Robert H. Babcock read a paper on "Consideration of Points in the General Management of Pneumonia." Dr. E. C. Rosenow read a paper on "Immunity and Specific Treatment of Pneumonia."

Joint Meeting with the Aux Plaines and Northwest Branches, Dec. 27, 1911

A regular meeting of the Chicago Medical Society was held, Dec. 27, 1911, with the president of the Aux Plaines Branch, Dr. C. E. Hemingway, in the chair. Dr. E. C. Seufert read a paper on "Vomiting in Diphtheria." Dr. R. C. Michel read a paper on "The Hypochondriac." Dr. C. E. Hemingway read a paper on "The Conservation of the Doctor." Dr. Arthur Loewy read a paper on "Obstetric Practice Without Assistance or Assistants."

DISCUSSION ON THE PAPER OF DR. SEUFERT

Dr. F. O. Tonney: Dr. Seufert's paper upon this interesting subject has been very instructive and profitable. From the laboratory viewpoint, I have noted with special interest the suggestion that vomiting bears a close relationship to post-diphtheritic paralysis so frequently seen after the acute stage of the disease has passed. It seems quite consistent with our knowledge of nervous disorders that the vomiting may be one manifestation of a stage of irritation, such as commonly precedes the advent of most forms of paralysis.

I bring up the laboratory side of the question in this connection because the facts elicited by laboratory study of the diphtheria toxin offer a ready theoretical explanation of the occurrence of post-diphtheritic paralysis and these associated symptoms of nerve irritation. Analytical study of the poison produced by the bacillus of diphtheria seems to indicate that there are three distinct and separate elements contained in it. These are the toxoids, which are degenerated toxins, but which still retain the property of uniting with antitoxin; the true toxins, to which the active symptoms of diphtheria are due; and the toxones, to which the symptoms of paralysis are due, all of these substances unite chemically with antitoxin, and in so doing are neutralized in a certain definite order; the toxoids first, toxins second and toxones last, just as acids in a chemical mixture are neutralized in the order of their ionic strength. It is possible *in vitro* to add a sufficient amount of antitoxin to neutralize the toxoids and toxins, leaving the toxones undisturbed. Such a mixture when injected into a guinea-pig produces paralysis, which is in every respect similar to the post-diphtheritic paralysis of recovered cases of diphtheria.

There is a practical lesson to be derived from this experimental evidence. It is that we should give antitoxin in excess, rather than in sparing doses. The rational treatment of diphtheria calls for the neutralization not only of the toxoids and toxins, but of the toxones as well, in order that the occurrence of these distressing after complications may be prevented. In the light of our knowledge of the chemical behavior of diphtheria poison, it is better to err on the side of giving too much antitoxin than on that of giving too little.

Dr. W. Evan Baker: I would like to ask Dr. Seufert whether in the statistics he quoted anything was mentioned as to whether early diagnosis and early administration of antitoxin prevented the vomiting.

Dr. Seufert: Nothing was mentioned on that point, but as all the patients were treated in a hospital, it is not very likely that early diagnoses were made.

Dr. J. M. Patton: I believe that all the factors mentioned may cause vomiting, therefore, we ought to be very observing in making a distinction between early vomiting in cases with a favorable prognosis and the vomiting in cases of severe infection, where the vomiting occurs as the result of the rapid absorption of toxins and the early persistent administration of antitoxin in sufficient amounts is indicated.

I have seen a child die within two hours from cardiac failure, a strong robust boy of 11, who was apparently well at 8 o'clock and who died suddenly after a comparatively slight exertion at 11 o'clock, which shows that we may have a rapid and profound effect on one organ by the diphtheria toxin. These accidents may occur later in the disease as well as early and are probably due to the fact that an insufficient amount of antitoxin was given to prevent the effect of the toxins on the nerve centers.

These facts are the strongest arguments for the early administration of antitoxin, and its persistent administration until we are satisfied that we have control of the situation.

DISCUSSION ON THE PAPER OF DR. MICHEL

Dr. H. I. Davis: Unfortunately the doctor was not definite enough. Did he want to define hypochondriasis as a separate entity, or did he want to bring out the social aspect of the question? I doubt the existence of hypochondriasis as a separate entity. It is a state of mind to be seen in different forms of psychoses. The term is a misnomer. It used to be applied to imaginary troubles of some kind or other, especially stomach troubles, and in psychoses it is seldom the condition is not met with. When a patient is apathetic, he is spoken of as being hypochondriacal. A dementia præcox patient will go for weeks without food, because he thinks his food is not being digested. He will vomit for days at a time, because he has delusions referred to the gastrointestinal tract. In pre-parietic states or in certain forms of paresis the hypochondriacal state of mind is common. Some authors have described a hypochondriacal delirium. Hypochondriasis is not seen in old people, the doctor says. That is not true. It is seen very often in senile patients. The patient is depressed and complains just as was stated above. If the doctor had in mind the hypochondriacal state of neurasthenia, he was correct. The case mentioned by the doctor where his patient was sick in bed for twenty years, I think was plainly a case of dementia præcox. The second patient was probably a neurasthenic in a hypochondriacal state of mind. The condition is often seen in these patients.

As to the social aspect of the question, any one suffering from psychosis presents to some extent a social problem. We have thousands of these patients in our state institutions, and many more are still walking the streets. Among them are many who have delusions that they are suffering from different physical ailments. The doctor has described a mental attitude often seen in different forms of psychoses, and we must deal with these patients as candidly as we can. The greatest wrong we can do them is to allow them to remain in the wrong channels of thought from which they can not escape, and consequently they remain often cripples for the rest of their life.

Psychiatry is an important subject. Unfortunately it still remains a selective subject in some of our best schools. It should be made an obligatory subject and should be given a prominent place in the curriculum of every medical school.

Dr. Seufert: I believe that Dr. Michel used the term hypochondriasis as synonymous with neurasthenia.

Dr. J. M. Patton: The physician should be very careful before he classes those patients as hypochondriacal. In a case I recall the family physician stated that a lady was suffering from hypochondriasis and he refused to do anything for her. Within a week that woman died. There certainly was something wrong there.

Some time ago I had under my care a man who might easily have been classed as a hypochondriac. He came to my office every day for a long time, each time with a new pain or ailment, sometimes of the stomach, sometimes of the heart, or elsewhere. I examined him carefully many times and failed to find anything wrong. The last time I saw him I did not examine him but gave him a prescription. He had a cough which should have suggested something to me, but it did not.

Three or four days later he consulted another physician who withdrew a quart and a half of fluid from his groin. I neglected him because of his constant complaining, but he evidently developed the trouble between the time I saw him last and his visit to the other doctor. Therefore, we must be careful in handling these patients so as to be sure of our ground.

Dr. R. S. Michel (closing): I did not say that old people are not subject to hypochondriasis, because I know that they are. I admit that this condition simulates neurasthenia and dementia præcox and other nervous conditions, but in my opinion there is a certain definiteness about hypochondriasis which makes a clinical entity of it. The neurasthenic has a dulled nervous system, really a jaded system, while the hypochondriac has an over-active nervous system.

DISCUSSION ON THE PAPER OF DR. LOEWY

Dr. J. D. Scott: There is one point in the paper that is especially important, and that is the question of the prevention of infection. I have never had a case of puerperal infection, although I have seen them in consultation. They are often caused by too frequent examinations. Only one examination should be made to determine the degree of dilatation, and it should not be made until necessary. Many cases do not require any examination at all.

Dr. Potter: We always should know what we are doing. Too many examinations are wrong, but we should know what we are doing.

Dr. R. S. Michel: I want to emphasize the use of a disinfectant for the hands. The doctor suggested bichlorid. Physicians have been known to contract syphilis from a patient during delivery, as well as otherwise. The use of bichlorid is the best means to prevent such infection.

Dr. W. S. Pickard: I have heard and read much about the ability to diagnose position by external examination, but I have never been able to do it in such a way as to satisfy myself that I was right. As to early and frequent examinations, fore-warned is fore-armed. One never knows in an obstetric case what emergency may arise. No matter how carefully you may examine and observe the patient, before and during labor, you can never be sure when eclampsia will develop, or whether it may prove to be a forceps case or one of version. Above all things, however, you must know the position of the fetus in utero before you apply forceps or attempt version, and unless you make a thorough examination of the patient you cannot be prepared to meet the emergency.

Frequent examination or careless examination may lead to infection, but I always urge early and careful examination in every case so that I may know what I am doing.

Dr. Arthur Loewy (closing): Dr. Pickard expresses my idea as to early examination. I cannot take pelvic measurements in my cases, and yet it is essential to know what conditions are present, and that knowledge can only be obtained by making an examination. I do not believe in frequent examinations, but one

thorough examination, made so as to satisfy you as to the conditions present, will place you on the safe side every time.

Regular Meeting, Jan. 3, 1912

A regular meeting of the Chicago Medical Society was held Jan. 3, 1912, with the president, Dr. J. M. Patton, in the chair. Dr. Alfred S. Warthin of Ann Arbor, Mich., presented (by invitation) a paper on "Cardiac Syphilis." Dr. Frederic Baumann read a paper on "Status Concerning the Nature of the Wassermann Reaction."

DISCUSSION ON THE PAPER OF DR. WARTHIN

Dr. Jas. B. Herrick: I am sure that I express the opinion of all when I say that we are deeply indebted to Dr. Warthin for having given us this fine presentation of certain new phases of an old subject. In the light of his work, which is of great importance, the pathologist will have to revise his ideas as to the microscopic and macroscopic lesions of cardiac syphilis. He can no longer confine his notion of syphilis to a gumma, or to interstitial myocarditis which he believes to be syphilitic because of evidence in other parts of the body. He must now recognize certain fatty changes in the heart muscle as being syphilitic. These peculiar myxoma-like areas which have been described, as well as some of the more advanced fibrous changes, may be due to syphilis. And Dr. Warthin's work is interesting, too, as opening up the possibility of further study along the line of syphilitic lesions not only at the beginning of the aorta, where they have been recognized for a considerable time, but also in the endocardium and pericardium. Search for the spirochete, therefore, is imperative.

To us as clinicians the lesson that this work brings is that we should search more carefully than ever for the evidence of syphilis in cases of cardiac disease that are not otherwise clearly explained and we should strive to recognize it only when it is still amenable to treatment. We are doing a great service to our patient if we recognize, for instance, that his aortic leak, that is marked and that has resulted in advanced permanent changes, is due to syphilis, if we then place him on appropriate treatment; but we shall do him a much greater service if we recognize this condition in its early stage. So, too, a case of fibrous myocarditis may be recognized as—with a strong degree of probability—due to syphilis; but we must recognize it in its incipency if we are to be of much help, though to make a diagnosis may be a matter of extreme difficulty.

I think that we are often a little careless in not paying enough attention to slight cardiac symptoms. We pass by as insignificant the statement of the patient, especially if he is neurotic, that he has slight pains in the region of the heart. They are not of sufficient gravity to be called the pains of angina, and on physical examination we cannot make out anything wrong with the heart. And so we let it pass as a case of cardiac neurosis or as a local manifestation of a neurasthenic condition. And in similar manner we may ignore certain irregularities of the heart of which the patient has just cause to complain.

All these syphilitic processes must have their beginnings, and it is not impossible that some of these cases which we dismiss because of our inability on physical examination to find anything wrong represent the early stage of the process in the muscle or coronary arteries. So that it behooves us to search more carefully for a history of syphilis, to remember the possibility of late hereditary syphilis, to examine more thoroughly for stigmata of syphilis, and to remember the Wassermann reaction. In this way we may perhaps recognize the disease of the artery or muscle in the early stages when it is still amenable to treatment. Cardiac syphilis may be far more common than we have previously believed.

We should not, however, go to the extreme and recognize syphilis in nearly every case of cardiac disease. We must be on our guard and not conclude that because a patient has had syphilis that his heart lesion is due to the syphilis; and, again, we must remember that because a patient's cardiac and vascular symptoms improve under potassium iodid is not a proof that the lesion in the heart or vessels is due to syphilis. And lastly, though we may know that the condition in the heart is due to syphilis, we should not expect too much in the

way of treatment when we are dealing with the late consequences of syphilis any more than we would in the case of advanced tabes, although we recognize that tabes is syphilitic in its origin.

Dr. Chas. S. Williamson: In listening to this paper my thoughts wandered to the aorta. One of the things that has interested the clinician with a pathologic viewpoint has been the interpretation of many of the conditions found in the aorta. All sorts of attempts have been made by pathologists to classify chronic aortitis or endoaortitis, and perhaps the most successful attempts were made by Heller and one of his pupils, Döhle. He studied a type which they regarded as distinctly specific of syphilis. They described a peculiar gelatinous thickening of the aorta not unlike atheroma but differing from it principally in the slight tendency to undergo calcification, and in a peculiar drawing in or retraction of the surface. But even these authorities recognized that all sorts of transitional conditions occurred between the truly specific type of syphilis of the aorta and atheroma.

The thought occurred to me that this peculiar gelatinous substance in the aorta, its lack of calcification, has, in view of the studies made by Dr. Warthin, had new light shed upon it. The peculiar transformation of the connective tissue in the heart would make it seem even more probable that these peculiar types of endoaortitis are truly specific of syphilis. Some years ago, Reuter, of Hamburg, discovered the spirochæte in the aorta, and I am sure that Dr. Warthin has had an equally extensive experience in aortic conditions and can tell us whether the Heller type of endoaortitis or mesoaortitis is syphilitic, and whether the spirochætes can be found with the same degree of regularity there, as in the endo- or myocardium. The structures are identical embryologically, layer for layer, and it would be interesting if the substantiation of Reuter's results should come about in this way.

Dr. W. J. Butler: We have all learned a great deal from this paper. We should recognize, however, that the clinician is seldom able to make a definite diagnosis of cardiac syphilis. We are more or less in the position of recognizing the changes described by Dr. Warthin as being syphilitic, but any of these changes may be caused by other conditions, such as coronary changes and fibroid myocarditis, aortitis, etc. We recognize these changes, leaving the etiology to be decided later, or by employing the more recent advances in the study of syphilis.

We are strongly inclined to regard these cardiac changes as being syphilitic when occurring in younger individuals, and yet other lesions produce the same changes. The Wassermann reaction has helped us to determine with a greater degree of probability that the etiology in certain cases is syphilitic in character. It is a deplorable fact, however, that many physicians will refer a case for the Wassermann test and when they get a negative report they are inclined to change their diagnosis even though the clinical evidence may point strongly to syphilis. Much harm will result from this. A negative Wassermann does not at all remove syphilis as an etiologic factor. Clinical experience should decide. We should not depend on the laboratory for a decision.

Dr. Warthin, closing: The question of aortic syphilis is interesting in connection with that of cardiac syphilis. The pathologist had argued for many years that aortic aneurysm and many conditions of the aorta are syphilitic, but the clinician was unwilling to accept his belief. Now in the presence of the spirochæte in these conditions, we have a definite proof of the correctness of our old views. I have studied the aorta in all of my cases of syphilis. The aorta is not affected as often as the heart, but when we find spirochætes in the heart we also usually find them in the aorta, and also the same tissue changes in the aorta wall. My material is too limited to trace the sequence of these changes and to determine their relation to the end result. The trouble is that in syphilis we see the terminal changes and not the early ones. What we need are careful pathologic studies of the early cases of syphilis with reference to the localization of the spirochæte. As a rule, people do not die in that stage. Every case of syphilis dying in the early stage should be turned over to the pathologist so that the early changes can be studied.

Dr. Butler's point as to a negative Wassermann reaction is only too true. The reaction may be negative, and in a number of instances known to me the clinician has been led thereby to change his diagnosis and treatment, and yet at the autopsy the conditions present were found to be undoubtedly syphilitic, active lesions and spirochaetes being present. The clinical importance of these localizations of spirochaetes in the heart can hardly be considered at this time, but we must consider the spirochaete as a great factor in cardiac disease, even though we have not a definite clinical picture. All cases of cardiac death, insufficiency or dilatation should have the nature of the cardiac lesion determined, and in doing this an examination of the heart wall for the presence of spirochaetes should be carried out by proper staining methods.

CHICAGO LARYNGOLOGICAL AND OTOLOGICAL SOCIETY

The regular monthly meeting of the Chicago Laryngological and Otolological Society was held Nov. 21, 1911, with Dr. Charles M. Robertson, president, in the chair.

DEMONSTRATION OF PATHOLOGICAL SPECIMEN SHOWING DISEASE OF PETROUS TEMPORAL SUBSEQUENT TO OTITIS MEDIA, WITH A NOTE IN REGARD TO THE ETIOLOGY OF SUCH CONDITIONS

E. GORDON WILSON

M. L., aged 7, was under observation for more than two years on account of a congenital heart lesion. During this time she had discharge from the right ear. There is no record of pain in or about the ear. Measles developed on April 8, 1911. The attack was moderately severe and ran the usual course. The aural discharge became more profuse, and on the 17th there was hemorrhage from the right ear, estimated at 10 ounces. From that time there was constant oozing, and on the 19th a second and worse hemorrhage occurred, estimated at 24 ounces. The patient now fell into a semi-conscious condition and died April 21, 1911. (Dr. Wilson is indebted to Dr. Walls for these notes and to Prof. Zeit for the post-mortem material.)

Post-Mortem.—The skin over the entire face was normal, neither swollen nor discolored. There were blood clots in the external and middle meatus extending between the cartilaginous external meatus and the tympanic bone into the upper part of the right parotid gland. When these were removed there was found to be a large abscess cavity lying on the under surface of the petrous bone. The whole inferior border of the petrous bone medial posterior to the temporal maxillary joint, including the Glaserian fissure, was bare. The joint itself was intact. On removing the skin over the parotid the posterior part of the glenoid fossa was found to be denuded of periosteum, the sharp inferior edge of the petrous was also bare and the finger could be passed into the abscess cavity as far as the apex of the petrous temporal bone. A probe could be passed along the under surface of the petrous bone into the upper postero-lateral part of the naso-pharynx anterior to the posterior vertebral fascia. The retro-pharyngeal glands were very large and there was pus in the naso-pharynx. The hemorrhage had extended into the upper mesial part of the parotid gland, the anterior and inferior parts of the gland were normal. The hemorrhage appeared to have come from a branch of the internal maxillary artery.

On examining the interior of the skull the dura was perfectly normal. Both lateral sinuses were normal; also the cavernous sinus. The right superior petrosal sinus, toward the apex of the petrous bone, contained a partly adherent blood clot. The dura over the apex of the right petrous bone, in relation to the ganglion of the fifth nerve, was thickened and more adherent than on the left side; there appeared to be a small area of localized inflammation at this point. The opening into the carotid canal in the right petrous bone was much more patent than on the left side. The osseous apex of the petrous showed no necrosis. The internal auditory meatus was normal.

The sequence appears to be:

1. Suppuration in ear.

2. Inflammation of the tympanic and petrous bones with periostitis and subperiosteal abscess.

3. Rupture into the pharynx.

4. Localized abscess in upper part of parotid gland, rupturing into external meatus between the cartilaginous and bony meatus.

Note: To demonstrate how easy involvement of the parotid can occur in such cases, Dr. Wilson showed a normal parotid capsule the gland having been removed. One notes that at the external auditory meatus the sheath fuses with the perichondrium and periosteum of the external auditory meatus and so there is formed a relatively strong partition extending back on to the petrous bone. The weak spot in this union is where the perichondrium and periosteum come together, and here it is where communication between parotid abscess and the external auditory canal occur. The weakest part of the capsule is medial, but here it blends more or less with the lateral aponeurosis of the pharynx.

Dr. Joseph C. Beck presented cases of plastic surgery of the head and neck in the various stages of development, some before operation, some after one or more operations having been performed, and some completed. The following cases were briefly demonstrated and will be more fully described and illustrated when published.

Case 1. Complete cleft palate and hare-lip.

Case 2. Posterior cleft palate only.

Case 3. Anterior cleft palate and hare-lip.

Case 4. Anterior and posterior cleft palate, but without the hare-lip.

Case 5. Short and immovable soft palate.

Case 6. Collapse of the anterior portion of the nose, due to absence of the triangular cartilage.

Case 7. Collapse of the anterior part of the nose, due to lues.

Case 8. Unilateral absence of the ala, due to electric burn.

Case 9. Absence of the pinna, due to epithelioma (post-operative).

Case 10. Same as Case 9.

Case 11. Retro-auricular fistula—post mastoid operation.

Case 12. Neuroplasty for the cure of facial paralysis, due to acute suppurative labyrinthitis.

Case 13. Destruction of the side of the face, due to epithelioma (post-operative).

Case 14. Rhino-phyma.

DISCUSSION

Dr. Otto J. Stein states that the great variety of cases shown here to-night offers a wide field for discussion. The subject of plastic surgery, or reconstructive surgery, is, of course, a vast one and offers a tremendous field for our ingenuity. It is one of special surgery and he thinks Dr. Beck has certainly been fortunate in having this large amount of material to work upon and that his results are certainly excellent as far as one can determine at such a distance. It is rather difficult to form any opinion as to these cases in as cursory manner as seen here to-night. He has seen considerable of Dr. Beck's work, some of the cases before operation, others after Dr. Beck has operated. Dr. Stein realizes that what he has to say on this subject is little from the personal standpoint. He has done very little plastic surgery, having only done it as many do—on the nose, mouth and some cleft palate work and intra-nasal work and some work around the ear, reconstructing the auricle and making parts of noses, but he has not gone into the subject as extensively as Dr. Beck. Plastic surgery, or reconstructive surgery, as it is frequently termed, has received a new impetus in recent years and has been brought to a specialty in itself. John B. Roberts of Philadelphia, who was here some time ago at the Chicago Medical Society, in discussing this subject, showed that a vast field has been opened up by the ingenuity of the surgeon.

It certainly has been demonstrated that all kinds of tissue can be transplanted and even organs have been transplanted, not only from the same individual and

from one part of the body to another, but from one individual or animal to another. Carrel has shown that after putting the carotid of a dog in cold storage for three weeks it can be transplanted into another animal and grown alive there. This shows the tremendous advance that has been made in this line of work. Although, as we know, this work dates back to the Indian period, the art has been lost until recent years, and it requires a knowledge and persistency, such as are possessed by Drs. Roberts and Beck, to bring out the wonderful possibilities this class of surgery possesses.

Dr. Stein would like to ask Dr. Beck what his views are upon the utilization of the Brophy method in cleft palate work as compared to the method used by Brown. He realizes that it was difficult for Dr. Beck to enter into the details of this work in presenting his cases but as the Brophy method has been lauded and used with great success by Dr. Brophy, Dr. Stein would like to know from Dr. Beck's experience what his opinion is as to the selective value of these two different methods of operating.

Dr. A. M. Corwin said that the Chicago Laryngological Society ought to be proud of Dr. Beck and his work. He stated that while this is a distinct department of laryngology involving work that has usually been turned over to the general surgeon, or rather not done at all, he supposed not over 1 per cent., or a half of 1 per cent. of laryngologists will ever enter this special field. Dr. Beck needs no encouragement of this body because his own enthusiasm, his own ambition and his own mechanical genius—it takes all three of these to do this work—have led him far in advance of anything that has been done in this city, so far as Dr. Corwin knows, and the Society simply wished to commend him.

The most interesting case exhibited that evening seemed to Dr. Corwin to be the case in which the skin had been, as he understood, made to serve the purpose of the mucous membrane of the rejuvenated larynx, and that is a very important thing. There are several cases in the Cook County Hospital which Dr. Corwin will take pleasure in referring to Dr. Beck which are along this particular line.

Dr. Beck in closing stated that in answering the question of Dr. Stein regarding the Brophy method, he wished to say that his experience with this method had been very good. There is no one method that can be applied to every case. It is just the particular case, and you frequently employ several methods in that one case. In the baby Dr. Beck presented he was able to pass the wire through and draw it across the front instead of drawing it right through and employing plates like Dr. Brophy recommends—not sticking to the point as laid down. Then again it makes a difference, of course, as to the age of the child. In the new-born Brophy's method is by far the best, but not carried to the full limit. Dr. Beck believes that many fail with this method because they try to do the complete operation at one sitting. For a man who has done so much work as Brophy has he thinks it is a question of his personal ability, and he frequently does the complete operation at one sitting.

Dr. Beck brought this material to the meeting so that men would be stimulated to do this work. This material is running around everywhere and they must pick it up. As a rule, men in this specialty of laryngology pass it by. By doing this it is driven into the hands of men who have not the ability to handle the delicate tissues as the laryngologist is able to do. Most of these cases are combined with interior work in the nose, mouth, throat, and this work surely belongs to oto-laryngologists. The sooner they take it up the sooner it will be a part of oto-laryngology.

Answering Dr. Robertson's question Dr. Beck says that he has injected that case twice since the original operation, but the paraffin has become displaced. That is the one trouble in this case. The act of swallowing displaces the paraffin and it finally becomes a foreign body, which is troublesome. Dr. Beck would warn against injecting too much of it. This woman is now able to make herself understood which formerly she could not do.

There are many points in connection with these cases which Dr. Beck did not have the time to bring out, but he will publish them in detail in the very near

future, illustrating them by means of stereo-photographs, which is a method strongly recommended.

TREATMENT OF FOREIGN BODIES IN THE ESOPHAGUS

E. FLETCHER INGALS, M.D.

CHICAGO

Esophagoscopy is of very great value in the treatment of foreign bodies in the esophagus, but it has not entirely supplanted the older methods. Many physicians from lack of time and opportunity are unable to familiarize themselves with esophagoscopy and must therefore rely upon the older methods in simple cases. The bristle bougie is one of the most generally useful instruments for removing common pins or small fish bones from the esophagus and must generally take precedence over the newer methods, even with those familiar with the latter. The old curved esophageal forceps and straight blunt-pointed strong forceps are also very useful, especially in removing coins or buttons from the esophagus, and may be employed without the aid of the esophagoscope in many instances. There is very great difficulty sometimes in finding even large bodies, as a penny or nickel in the esophagus, hence it will be realized how difficult it might be to discover pins or fish bones.

Formerly, when a foreign body could not be removed through the mouth it was often crowded into the stomach and this is a proper procedure even now in certain cases, especially when the body is not very large and has passed down into the mediastinal portion of the esophagus.

Esophagotomy must sometimes be practiced for large irregular bodies, but it is much more dangerous than esophagoscopy and when the body has passed below the clavicles, unless it can be removed in the latter way, thoracotomy would be suggested, but the results from this operation are usually fatal.

Although the esophagoscope was used by a few persons in Europe from the time of its invention by Kussmaul in 1866 up to the date of Kirstein's paper in 1895, it did not come into great favor until taken up by laryngologists following Kirstein's work from 1896 to 1899. Most of the work since then has been done by laryngologists.

In present esophagoscopy it is of the utmost importance to have the head properly held by an assistant, for if it is slightly out of the correct position the operator is liable to become confused and may be greatly delayed.

The esophagus is not very sensitive unless inflamed, therefore often no anesthetic is needed in adults who are able to tolerate a little pain or discomfort or in children who are small enough to be firmly held. In the latter the discomfort that would be experienced is liable to be much less than that from an anesthetic. A local anesthetic is often sufficient for adults; about 20 per cent. cocaine in a 1 to 2,000 of suprarenalin is the best, but cocaine in this proportion is too dangerous to be used in any considerable amount in children. Chloroform would be the pleasantest anesthetic but it is much more dangerous than ether, therefore the person who uses it assumes grave responsibility. Complete anesthesia is often necessary, not only for the patient's comfort but to remove spasm and allow the operator to manipulate his instruments easily. It must not be forgotten, however, that profound anesthesia is dangerous in the presence of dyspnea. It should be remembered also that dynamo currents are unsafe for the illumination because of the liability of short circuits. A suitable dry battery like Jackson's is the best source of electricity.

SOME ESOPHAGEAL CASES

STANTON A. FRIEDBERG, M.D.

CHICAGO

This paper deals with the use of the direct speculum and esophagoscope in the removal of foreign bodies and in the diagnosis and treatment of certain esophageal conditions, with cases cited as examples.

The employment of the direct speculum to assist in the removal of foreign bodies lodged in the upper part of the esophagus in children is described and recommended as easier of performance than with the esophagoscope.

Case 1.—Girl, aged one year, with a penny lodged in the esophagus. The end of the speculum was introduced into the mouth of the esophagus and the coin seen about one-half inch below. A long urethral forceps was used in the removal.

Case 2.—Girl, aged 17 months, had swallowed a penny four days before. The same procedure was carried out and the coin easily removed. No anesthetic was used in this case.

Case 3.—Girl, aged 5 years, had swallowed a tin whistle. Two days after the accident the child was placed on the table and an attempt made to remove the whistle without the anesthetic. The foreign body was easily found but the resistance it offered to removal was so great that ether had to be administered. The removal was then easily brought about.

The recovery of all of these cases was rapid and uneventful.

Case 4.—Male, aged 30 years. The history given was that a bone had become lodged in the throat. Examination with the direct speculum showed great edema of the lower part of pharynx of the right side and also of the epiglottis and aryepiglottic fold of the same side. Esophagoscopy was performed without the bone being discovered. Examination several days after disclosed the bone impacted in pyriform fossa whence it was removed by the indirect method.

Case 5.—A child, aged 14 months, had swallowed a metal toy, the exact nature of which was undetermined. After a long search the foreign body was found but could not be removed on account of the resistance it offered. The latter was so great that it was found that the esophagus would be ruptured. A second operation was not permitted by the father who removed the child from the hospital.

Case 6.—Boy about 4 years of age, upon whom a gastrostomy had been performed on account of a stricture of the esophagus due to his having swallowed lye. With a Jackson tube the mouth of the stricture was located and dilated with bougies passed through the tube. Dilatation was then carried on in the ordinary way for several weeks, during which time he improved greatly. He was then taken home and all treatment discontinued. Subsequently he was returned to the hospital and the same procedure was repeated. Before he finally disappeared from observation he was able to swallow meats and other solid food with comparatively little difficulty.

Case 7.—This was a patient with great obstruction to deglutition. An esophageal bougie could not be passed. Examination with the direct speculum showed an irregular mass occupying the mouth of the esophagus. On the posterior wall this mass projected forward in the form of a ledge. This latter prevented the passing of a bougie. With the aid of the direct speculum a small bougie could be passed under the ledge into the esophagus.

DISCUSSION

Dr. H. Stolte, of Milwaukee, states that the society feels greatly indebted to Dr. Ingals for his excellent paper and they regret that these papers are usually not published in journals which are read by the general practitioner. The general practitioner is the man usually who sees the case first, and although esophagoscopy has now been practiced for nearly twenty years, most general practitioners know nothing about it. For that reason they try methods which are absolutely unjustified. They work in the dark, with instruments which are not fitted at all for the purpose, without considering the shape of the foreign body. In this way they lacerate the esophagus, and so it happens that when the case comes to the man who does the work, he gets it in a most undesirable condition—in a septic, highly inflamed condition, so that it is very hard to recognize and find the foreign body.

Dr. Stolte mentioned the case of a woman who swallowed a big piece of bone in eating her soup. She felt at once a severe pain, rushed to a specialist, who tried to convince her that it was just globus hystericus, although she was in

an agony of pain. He tried to do the same thing for two days, pushing a probang up and down, showing that there was nothing there. She came on the third day to Dr. Stolte with a temperature of 103 F., with symptoms of sepsis of the esophageal wall and the mediastinum.

As Dr. Ingals said one often glides over a foreign body without seeing it. Recognizing this, Dr. Stolte used a spatula speculum which leaves open one side of the esophagus, especially as in nearly all cases of this kind the foreign body is located within the mouth or below the mouth of the esophagus. He was able at once to discover the bone, three-quarters of an inch wide and one and a quarter inches long, very sharp, with cutting edges, and also a big gangrenous erosion in the esophagus. He succeeded in removing the bone under anesthesia within a few minutes. After the foreign body was removed the patient was pulled through the very critical situation, as there was a beginning septic mediastinitis. Temperature dropped the next day to 102 F., and within a week the patient was able to swallow without pain. The symptoms gradually disappeared altogether. No stricture was left.

This shows that the general practitioner ought to hear something about these things as often as possible.

Dr. O. T. Freer stated that the difficulty referred to by Dr. Ingals and Dr. Friedberg of having the esophageal tube glide past an undiscovered foreign body, has also been his. In such cases, where the foreign body is situated in the laryngopharynx or behind the larynx it may be made visible by that laryngeal speculum of Brünig's, which has a slender beak about two inches long. With this beak introduced as a lever behind the larynx, the larynx may be lifted forward, so that the laryngopharynx and entrance to the esophagus are widely stretched open to view. A case in illustration: A tailor, whom Dr. Freer saw with Dr. Austin Hayden, had a broken needle lodged in the posterior esophageal wall just below his cricoid cartilage. The esophageal tube slid by this needle without disclosing it, but when the Brünig's speculum was introduced it could be readily seen and extracted.

For illumination in esophagoscopy and bronchoscopy, Dr. Freer uses the Kirstein head lamp fitted with an umbrella filament light bulb, a device which we also owe to the genius of Brünig. In this manner a long pencil of light is obtained of such depth of focus and penetration, that the whole length of the tube, and especially its bottom, are evenly and brightly illuminated. The ordinary horse-shoe filament light bulb, when used in the Kirstein lamp, gives a much longer pencil of light than the head mirror, but it is not so effective as the Brünig bulb.

The long-stemmed little rice grain lamps used in the tube and so easily fouled and burnt out, and Brünig's attachment of the Kirstein lamp directly to the tube, Dr. Freer has not found so good or reliable as the original Kirstein lamp with the Brünig bulb used on the forehead, as a freedom of intra-tubal manipulation is thus obtained which can be got in no other way.

There is one condition where all intra-esophageal manipulation is contra-indicated and the external operation of esophagotomy is the proper one, and that is where a beginning phlegmon behind and beside the trachea in the neck, shows that a foreign body has already perforated the esophageal wall.

Dr. Joseph C. Beek reported two fatalities in his experience this summer in esophagus foreign bodies. He reported them because Dr. Ingals mentioned the fact that these cases are not reported for various reasons. He stated that he was safe in doing this, however. Both cases were the result of the stimulation of publishing in general journals the beautiful instruments, broncho-esophagoscopes, used by general surgeons. Both came to him one week after the foreign body had been in the esophagus. In one case he did not succeed in even passing a tube until after death. The death was on the table. The child had a septic pneumonia, and Dr. Beek was urged by the gentleman who had attempted to remove it to at least make an attempt. This was the case of a penny in the esophagus. On looking in he found a frightful condition of affairs, great traumatism.

The other case, that of a pearl button, had been treated something on the order of the pipe-stem story referred to by Dr. Ballenger. A picture had been shown of the foreign body, and later a medicine given, of a syrupy nature, to dissolve the button. Later an x-ray was shown with the button gone. Dr. Beck felt the foreign body and tried his best to remove it, but could not do so with any form of instrument, the tissues were so traumatised. It was finally given up and the child died of a septic infection.

Dr. Beck simply mentions these cases as showing the danger of men doing this work who have not been properly trained and who have not sufficient experience.

Dr. L. W. Dean, Iowa City, Iowa, stated that he wished to report the case of a patient who was unable to swallow even a drop of water. This patient was a woman, about 63 years of age. At the age of 18 she had swallowed some concentrated lye, and since that time had been able to swallow only semi-solid foods. About two days before Dr. Dean saw her she was eating some soft salmon and suddenly found that she could not swallow even a drop of water. She was brought to Iowa City. In the meantime she had been given rectal injections of water, in order to keep up her strength. She was taken to the internist who made a diagnosis of a malignant growth, superimposed upon a cicatricial stenosis of the esophagus. The physician, hearing of the esophagoscope, wished to have an examination made, and with the internist brought the case to Dr. Dean. The esophagoscope was passed, and as soon as the stricture was approached Dr. Dean took one look and then asked the internist, who had never looked in an esophagoscope in his life, to look in and tell him what he saw. He said he saw a vertebra of salmon fitting in the stricture of the esophagus. This was the case. The vertebra fitted the stricture similar to a cork in a bottle. The vertebra was dislodged with a bent probe and readily removed.

A second interesting case that they had was that of a child, 4 years of age, who had never been able to swallow anything except liquids. The passage of the esophagoscope showed a round tumor at the cardiac end of the esophagus, underneath the mucous membrane of the esophagus. It was freely movable. It could be pressed down. The diagnosis made by the internist, surgeon and Dr. Dean was a congenital tumor of the esophagus, simple in nature. The problem presented was the removal of the tumor. Dr. Jepson, the general surgeon, advised the parents to have this patient operated on, and the operation as planned was this: to open the stomach, and after the stomach was opened to have the esophagoscope passed, forcing the tumor, as was thought could be done, into the cardiac end of the esophagus, where it could be grasped by him and removed. Unfortunately, this patient did not return and they were not able to complete their work, in what seemed to them a very interesting case.

Dr. A. M. Corwin stated that the dangers of the operation had been fully pointed out by Dr. Ingals and others but that a case that he remembered seeing years ago shows the danger of delaying removal where a history of foreign body in the esophagus is present. The patient was a well nourished woman with a pulse of 160, nearly in collapse, but not unconscious, with a history of having swallowed a foreign body, a bone of some sort, a week or two before. At first she could swallow ordinary things, but later was unable to swallow even water, and within a few hours from the time he saw her the history was that she suddenly began to swallow again. She was not suffering from great dyspnea at the time, but she said that at the time she began swallowing again she had considerable pain in the chest and shortness of breath. He looked her chest over thoroughly and found the right lung was collapsed and pneumo-sero or pyo-thorax present. He had the patient swallow a very little warm water, which evidently went directly into the pleural cavity through an esophageal ulceration. The woman was in such condition of collapse that the only prognosis was made that could be made, and in order to relieve the condition of infection which was taking place in the chest, an opening was made and a mixture of blood and fluid, pus and food, drawn off from the chest. The patient died within a few hours of septic poisoning, of

course. Nothing could have been done locally by passing tubes in that case. This simply accentuates the need of going after these cases with the *x*-ray in the proper manner, locating the foreign body and removing it before irreparable harm has been done.

Dr. Ingals (closing) stated that the majority of foreign bodies lodge back of the cricoid cartilage. Respiration normally opens the esophagus below the first constriction. He has not attempted to secure any greater dilatation of the esophagus by deep respiration.

The foreign body is firmly grasped by the normal muscular contraction and by the swelling but he has not observed strictures. Spasm of the esophagus is not at all infrequent in such cases, which should be relieved by complete anesthesia, unless there is sufficient dyspnea to contraindicate.

Dr. Friedberg (closing) wished to say a word in regard to spasm of the esophagus. He believes that under deep anesthesia this is overcome, although in one case he saw, that of a marble in the esophagus, anesthesia was not able to overcome contraction of the cardiac end of the esophagus.

Regular Meeting, Dec. 19, 1911

EDELMANN'S ACOUSTICS FOR OTOLOGISTS

J. HOLINGER, M.D.

When we stop to compare the clear optical principles on which the ophthalmologists base their therapy, with the indefinite knowledge of acoustics which we have at our disposal, a book like that of Edelmann on "Acoustics for Otologists," will be a welcome or rather a necessary addition to our library. Edelmann dedicates the book to the memory of Bezold, and I believe that a great deal of the criticism of Bezold's work would have been avoided if the principles of acoustics had been taken into consideration earlier. It was a great satisfaction to see how the unbiased American student at once grasped the importance of Bezold's teachings. Wherever there was reserve or opposition it was easy to trace the cause to influence from abroad. The German student who in his preparatory studies is steeped in Latin and Greek, is and was ill-prepared for the mathematical and physical questions involved. Permit me to cite from literature one example of this kind. A certain German professor in order to prove that the handle of an ordinary tuning fork does not vibrate longitudinally while the prongs vibrate transversely, screwed the handle in a vice, and with the microscope watched some grains of lycopodium powder that he had poured on the stem. Of course he did not see any longitudinal vibrations and for this reason. Suppose you want to study the wagging of a dog's tail, by taking hold of his tail with both hands. The consequence will be, if the dog does not bite you that the tail will wag the dog. Yet this and a number of other equally absurd mistakes did not baffle the professor but induced him to write a lot of insolent general and indefinite criticisms which certainly hurt Bezold's feelings but did not shake the logic of his deductions.

One reason for bringing this up here is the fact that a number of our American colleagues mistook the absence of an answer to many of these criticisms and especially of an answer in the same offensive tenor, for an admission of the weakness of Bezold's arguments, whereas it was simply the answer of a scientist and a gentleman. Whenever he considered an answer necessary in the interest of the cause, he gave it in a scientific, never in an aggressive manner. Another reason for mentioning this matter here is that it caused Edelmann to publish the proofs for his and Bezold's theory of vibration of tuning forks. So it's an ill wind, etc.

The first chapter of Edelmann's book explains the transverse and longitudinal progressing vibrations and the standing vibrations. The transverse progressing vibrations may be produced by striking a tight rope near one end, longitudinal

progressing vibrations by letting a slightly stretched spiral spring snap back. The natural harmonics of a violin string are given as an example of standing longitudinal vibrations.

The next chapter explains a number of technical terms and then shows how we can represent vibrations by drawings, and finally mentions the photograph as the most accurate instrument for this purpose.

Then follows a discussion of clear tones, their strength each and the interval between two tones, the gauging of a normal tuning fork and finally the number of vibrations of the different sounds in Bezold's tone series.

The phenomenon of the interference of two simultaneous sounds is given in the next chapter. After this the mechanism of the tuning fork is discussed. There are three kinds of tuning forks: First, the simple horseshoe shaped steel rod with the same rectangular section throughout; second, the fork with the heavy mass of steel at its arch; third, the fork with weights. The proofs are then given for the fact that a symmetrically constructed fork must show longitudinal vibrations of the handle when the prongs vibrate transversely. This proof is first given theoretically by constructive drawings, then practically by five different experiments. Considerable space has been given these points because they are of utmost importance in the Rinné test and the Weber-Schwabach test. You have often heard the argument that in Rinné's test we compare things that cannot be compared, namely, longitudinal vibrations of the handle transverse with vibrations of the prongs of the tuning fork. Gentlemen, we compare the *time* of the vibrations and here you have the proof that the *time* of vibration of the handle is identical with the *time* of vibration of the prongs, as long as the prongs vibrate transversely the handle must vibrate longitudinally. The matter is very important and I wish to illustrate it by an example: Suppose there were a steam car line and an electric car line from here to Milwaukee, I know that the steam car takes exactly the same length of time to make a certain distance as the electric car does. Yet I find that the steam car always arrives in Milwaukee ahead of the electric car. Now, then, doesn't that give me a right to draw the conclusion that the electric car line either makes a detour, or makes more and longer stops? And in drawing this conclusion do I compare an electric car with a steam car? I do not think so, I only compare the time it takes them to get to Milwaukee, I might as well take two steam cars for the experiment, provided that the crew that runs over the tracks of the electric car has the same instructions as the crew on the electric car. At the end of this chapter proof is given that the transverse vibrations of the handle are due to a symmetry of the metal of the fork.

A very interesting chapter is devoted to the construction of tuning forks free from overtones for the Rinné and Schwabach tests. It begins a discussion of the production of overtones. It was through accident that the possibility of eliminating them was discovered. Bezold had an "A" fork free from overtones which Edelmann with the best of machinery could not duplicate, although Bezold's fork was made by a simple locksmith and by hand. It seemed like the same problem as with the old Italian violins which cannot be imitated. The explanation came with the discovery of a tuning fork that did not sound at all when held in the usual way by the handle. Any fork when laid down so that both prongs and the handle are supported by two pieces of wood will sound if struck in the middle. Edelmann calls this sound "Plattenton," because it is produced in the same way as the sound of a steel plate. If this sound is accidentally the same as the sound of the prongs unsupported, these two sounds kill each other since, according to Pisko, one sound is by resonance transformed in the other and then muffled by the holding hand, and the fork is mute. This principle is used to eliminate the overtones. If this second sound is identical with the first and strongest overtone (the quint of the fundamental tone of the prongs), we have a tuning fork without weights which is for all practical purposes free from overtones. Such a fork will also sound a long time. Bezold's original "A" fork accidentally fulfilled this requirement.

The chapters on Bezold's series of tuning forks offer no new feature for discussion here except that in the lowest forks where adventitious sounds are the most

objectionable, the sound of the handle is eliminated by constructing the weights of the prongs asymmetrically, thus excluding the possibility of a vibration of the handle. The gauging of the Galton whistle proved a very hard task. It was accomplished by means of Kundt's dust figures. The first whistles were not accurate and Edelmann freely admits this. He has constructed a new one. A further chapter on Melde's sounding plates and Koenig's rods I shall skip, as I think they are important only theoretically. The monochord produces longitudinal vibrations, and it seemed for a while as though it were destined to replace the Galton whistle in our hearing tests of the highest sounds. But according to Edelmann it produces so many adventitious noises in the highest pitch for which it is the most important that its value there is questionable.

A chapter on a continuous series of resonators to increase the strength of the sounds and to differentiate the clear sounds is not of sufficient practical value to us here.

Of much greater value are the chapters on rational and objective measuring of the strength of sound and the possibilities of hearing. A general discussion on how to measure anything gives us an insight into principles otherwise foreign to us, but in which Edelmann is authority since I know that in his laboratories his specialty is the manufacture of the finest apparatus for measuring magnetism, electricity, etc. We therefore have to take his word for it if he tells us that an enormous apparatus is necessary for measuring the strength of a sound. The principle in short is this: a normal siren with a certain known number of holes of a definite diameter is turned by a motor having a certain number of revolutions. A current of air is blown with a known pressure against the holes. On account of the extreme sensitiveness of the ear this pressure is often as small as one one-hundredth of one mm. of water. Therefore a special apparatus, a micrometer for air pressure with mirror and telescope, had to be constructed to measure this pressure with an accuracy of one ten-thousandth mm. Edelmann took a series of measurements on his own ears and found that the ear is most sensitive to musical sounds, less so to the lowest sounds and to sounds above $c3$. The quantitative measurements with this accuracy have of course only scientific value but they show the difficulties we have to face when we want to talk about accuracy. Edelmann proposes as the unit of sound that strength of sound which is created in a normal siren blown against with a current of air whose pressure equals the pressure of a column of water of one-tenth mm. in height. He calls this unit "Phon" (1ϕ) and always adds in parenthesis the pitch of the tone measured. He takes the unit so small in order to avoid decimals. 1ϕ is of course different for each pitch. 2ϕ is not necessarily twice as strong or is not necessarily felt twice as strongly as 1ϕ . The laws of increase have to be studied first. While these instruments cannot be used directly they will be used for gauging handier instruments for practical use. Edelmann offers gauged tuning forks that are suspended from an elastic handle and have a contrivance which indicates the moment the prongs have attained a certain excursion. With a stop watch we note the number of seconds from that moment till the patient does not hear the sound any more. The sound is conducted to the ear through a tube of a certain length and width. A table of figures accompanies each of these forks giving the number of phones of hearing corresponding to each second that has elapsed from the moment of the known excursion-till the sound is no longer heard. This gives us figures by which we can not only make a comparison of our own results of hearing tests made at different times, but can also compare them with the results of others. Of course only the number of phones of the same pitch can be compared but each fork has to be separately gauged since the steel differs. It takes a series of these forks of different pitch to test the whole scale.

In order to measure the pressure with which an "A" fork is set on the vertex of a patient in Weber-Schwabach's test, Brüning's handle is advised which indicates directly the pressure used. This seems to be a great advantage.

The last chapter treats of the construction and the use of a mechanically accurate model of the middle ear, about twenty-two times enlarged. It also serves to measure the proportion in which movements of the tympanic membrane

are transmitted to the fluid of the labyrinth. Helmholtz felt the need of such a model. Politzer and Helmholtz began in detail the study of the movements of all parts, but it was Bezold who gave the logical explanation of the whole apparatus by showing that whenever any part of the whole mechanism is out of order, hearing for the lowest part of the sound scale is lost, while hearing of the upper octaves is little or not at all impaired. This changed the general question of the physiology of the whole apparatus, and brought forth the solution which is given at the end of the book and which appears just as clear and simple as it is surprising. In the study of the whole proposition it becomes evident that this solution could only be found by the happy combination of a careful observer and deep thinker such as Bezold, with a practical physicist and eminent mathematician as Edelmann. I may say that the construction of this model was the greatest care of the last months or year of Bezold's life, and when Edelmann finally after many unsuccessful attempts, succeeded, and the result could be deducted, Bezold considered his life's work finished. From actual measurements and calculations it was found that movements of the handle of the hammer of 24 degrees will cause movements of 1 degree on the foot plate of the stirrup. The final paragraph of the book says: "The conclusion of all the foregoing considerations allows us to answer the question," in which ratio are vibrations of the tympanic membrane transmitted to the fluid in the labyrinth? in the following manner. "In the inverse ratio of the specific gravity of the vibrating media."

In closing I wish to add that this work of Edelmann is a collection of papers that appeared in different journals. My paper was written with the object of drawing your attention to the book, and not giving a full account of its contents. A number of interesting facts I could not touch upon at all. This book is another stone of the building of modern otology, for which Bezold furnished the normal and pathologic physiology, Siebenmann the pathology.

DEMONSTRATION OF CASES

Dr. R. H. Good demonstrated the following cases:

Case 1. This patient five years ago accidentally developed what his physician called a carbuncle of the nose, which discharged for six weeks and caused a necrosis of the upper cartilages, and the upper portion of the cartilaginous septum of the nose.

This picture, Fig. 1, shows the deformity of the nose, which, however, on paper does not look nearly as bad as the condition was. He consulted me about five months ago, and stated that he could not mingle in society because his deformity resembled syphilitic noses. He had consulted about twenty rhinologists, and was always advised to leave it alone.

I advised inserting a piece of rib into the nose, through the skin and periosteum, which I elevated above the nasal bones, but found the periosteum very adherent to the tissues where the abscess had been, so that I penetrated same and simply loosened the skin over the depressed area.

I then exposed the seventh rib at the mammary line, peeled off the periosteum, and chiseled out a piece about the size estimated to fill the depression, and immediately inserted it into the nose through the above described incision. I found the piece not large enough, so I took out another piece of rib and placed it underneath the former piece. The nose now appeared perfectly normal to all the doctors present and I sewed the wound subcutaneously, with fine catgut in eye needle, and put on a collodian dressing and plaster paris splint over nose, held in place by adhesive strips. The patient remained in hospital one week. There was absolutely no reaction nor pain at any time after operation.

Figure 2 was taken one week after operation. After the patient had been home two weeks I received a letter from him stating that a depression formed close to the tip of the nose which he would like to have fixed. On examination I found that the pieces of bone had slipped up slightly, Figure 3, and caused the depression at the tip. I was going to inject paraffin, but the patient preferred to have another piece of rib put in, which I did.

This time I made the incision through the skin at the tip of the nose and elevated the skin thoroughly. I now exposed the eighth rib and removed a piece of rib, which I inserted but found it too small, so that I took still another piece and placed it under the former which made a perfect nose, having inserted four pieces of rib. The patient remained in the hospital four days. This is the first time I have seen the patient since the second operation, being two months, and Figure 4 is a picture taken at this time.

Case 2.—Mr. Turk. This patient, Figure A, fell down stairs fracturing his zygomatic process and dislocating his malar bone.

It was six weeks before the patient consulted me, and he said he was obliged to drink heavily to relieve the pain which had been gradually getting worse.

The accompanying photo shows the depressed cheek before operation. I excluded antrum disease and the pain was due to pressure on the infraorbital nerve.

I had three *x-ray* pictures taken, but none of them revealed the exact nature of the fracture. I put the patient to sleep and attempted to pry out the malar bone by putting a heavy urethral sound up the buccal cavity with the end under the malar stump of the zygomatic process, but fortunately failed in doing so.

I then made an incision over the zygomatic process for the purpose of getting under the malar end of the zygomatic process and lift it out and anchor it to the fractured end of the zygomatic process. I, however, found the zygomatic process fractured in two places, leaving a loose piece of bone about three-quarters of an inch long.

I refractured and replaced the malar bone, drilled a hole through the zygomatic process, passed a wire through and let the ends project out through the wound and then tied them over Carter's nasal splint, with which I kept the malar bone in place for ten days. The loose piece was left in place and has united very nicely and the patient has practically a normal cheek.

Case 3.—Figure 5 is the photo of a case of an old fractured nose, which I operated on by fracturing the nasal bones and the nasal processes of the maxillary bones and using Carter's splint to hold it in place. Figure 5 shows the nose two weeks after operation with fairly satisfactory results.

Case 4.—I have here a picture of a young girl, Figure 7, with atrophic rhinitis who has a very flat nose with a large tip. I performed the Carter operation on this patient with very poor results, as seen in Figure 8; picture taken two weeks after operation. It shows a slight improvement and the marks of pressure necrosis from the splint can still be seen as well as the marks from stitch abscess. I would have done infinitely better to have inserted a piece of rib in this case.

REMARKS ON THE DEMONSTRATION OF A MODEL RECONSTRUCTING THE CANALS OF RIGHT AND LEFT LABYRINTHS

(Preliminary Communication)

E. R. LEWIS, M.D.

DEBUQUE, IOWA

A study of the semicircular canals from the standpoint of their functional conjugations and inter-relations, led me to the construction of a number of models during the past two years, all of which have differed radically from the usual reconstruction in that the grouping together of the vertical canals depends upon a conception of co-responsence quite different from what was taught at that time. According to the other conception of co-responsence, horizontal nystagmus depended upon altered activities in the end-organs of the horizontal canals, rotatory nystagmus upon altered activities in the end-organs of the superiors (or anterior vertical canals), vertical nystagmus upon altered activities in the posteriors (or posterior vertical canals); and further according to the other conception, vestibular imbalance depended upon preponderance of impulses from either the right labyrinth or the left labyrinth, the character of the nystagmus (horizontal, rotatory or vertical) depending upon the individual canal or canals constituting the source of the impulses preponderating. Graphic

representation of vestibular balance and imbalance was made by drawing a scales in, and out of equilibrium.

Bearing in mind Ewald's findings concerning effects of endolymph-movements in the horizontal and superior (or anterior vertical) canals, and with due regard to the anatomic relations between the canals of the right and left sides, the old reconstruction of the horizontals is acceptable; the two conjugated canals (right and left horizontals) lie in the same plane, their utricular orifices are opposed, and extraneous influence of a nature to disturb vestibular equilibrium by affecting both sides simultaneously (such as rotation for example) would always affect right and left horizontal canals equally and oppositely.

Not quite so in the case of the superior canals (or "anterior verticals"). Their reconstruction involves coupling together two canals lying in planes at right angles to each other (in antero-dextro-oblique and antero-sinistro-oblique planes of the skull); their utricular openings are opposed *in a way*, though each is 45 degrees off the axis of true diametric opposition. Rotation, however, would not always affect right and left superior canals equally and oppositely; for instance, rotation with the right superior canal in "Optimumlage," i. e., exactly within a plane at right angles to the axis of rotation, would find the left superior canal in "Pessimumlage." Still, by rotating with the head in such a position as to bring right and left superior canals (or "anterior verticals")



in position midway between "Optimum-" and "Pessimum-lage," experiments being results not inconsistent with Ewald's findings.

But how about what we have left, the posterior canals (or "posterior verticals")? Their reconstruction involves coupling together two canals lying in planes at right angles to each other, and their utricular openings are *not opposed*, but are on the *same (posterior) end*. Rotation affecting these canals must affect them *similarly and not oppositely*.

My inclination has been to look upon the vestibular apparatus as the analog of the "universal joint" of machinery, the latter being devised for the *transmission* of motion in any direction, the vestibular apparatus being devised for the *perception* of motion in any direction.

The skull holds one, and *only one*, vestibular apparatus. It happens that its two halves are not in juxtaposition, but it is none the less a *single organ*. The bone intervening between right and left temporal bones has no connection with the vestibular organ and hence is negligible in this consideration. Let us therefore ignore it and imagine the two halves of the vestibular organ to have been displaced inwards toward one another to a point at which fusion can take place, and we have what is represented in the model herewith presented.

The utricles merge into one; the crures communes co-incide—one crus resulting; the non-ampullar ends of the horizontals anastomose; the canals fall naturally into three conjugate pairs, each pair lying within the same plane, each pair with diametrically opposed utricular openings, the arrangement of each

canal with relation to its co-respondent consistent and identical. And the apparatus is simply and efficiently devised for universal perception of motion.

It has long been known that rotation with head upright or with head bent forwards or backwards, causes nystagmus; and it has been accepted, in explanation of the nystagmus so caused, that it has been due to the creation of impulse-preponderance in the right or in the left labyrinth, as the case may be. In other words, it is caused by upsetting dextro-sinistral balance in the vestibular apparatus. It has also long been known that rotation with head bent over one shoulder causes vertical nystagmus. Just how vertical nystagmus can be caused by this procedure is not at all clear on the assumption that, in order to cause vestibular nystagmus, dextro-sinistral balance in the vestibular apparatus must be upset. In fact, the production of vertical nystagmus by rotation with the head over shoulder *proves conclusively that vestibular equilibrium can be disturbed by upsetting some balance other than dextro-sinistral*, for in this experiment both right and left labyrinths are affected *similarly and equally* by that influence *which alone is responsible for the disturbance of vestibular equilibrium*. Only one deduction is possible, namely, that upon *antero-posterior* balance, just as upon *dextro-sinistral* balance, depends maintenance of vestibular equilibrium; or that *antero-preponderance* or *postero-preponderance*, just as *dextro-preponderance* or *sinistro-preponderance* may establish vestibular imbalance.

Instead of representing vestibular balance and imbalance by a scales in, or out of equilibrium, as already shown, the situation might be represented graphically by a two-armed scales, one arm in the antero-posterior direction, the other arm in the transverse or right-and-left direction. Equilibrium would be represented by four five-pound weights, one at each end of each arm; one pound added to or taken from any end causes imbalance.*

Horizontal nystagmus occurs in the plane in which lie the two canals whose altered activities are responsible for the nystagmus. *From the standpoint of the pull responsible for the slow component*, therefore, this motion of the eye-balls must be looked upon as a *simple* motion.

Rotatory and vertical nystagmus on the other hand, do *not* occur in the planes in which lie the canals whose altered activities are responsible for the nystagmus, both vertical forms of nystagmus (so-called "rotatory" and "vertical") resulting from a *summation of impulses*, not from *two* but from *four* (vertical) canals. Rotatory nystagmus occurs when both vertical canals of one side ("superior" or "anterior vertical," and "posterior" or "posterior-vertical") are in similar condition of altered activities ("plus," or "minus"). Vertical nystagmus occurs when both "anterior-vertical" canals (right and left), or both "posterior-vertical" canals (right and left) are in similar condition of altered activities ("plus," or "minus"). *From the standpoint of the pull responsible for the slow component*, therefore, these motions of the eye-ball must be looked upon as *resultant* motions, the slow component in rotatory nystagmus to the left being the resultant of two pulls, one pull obliquely forward and outward to the right in the plane of the antero-dextro-oblique pair of canals, the other pull obliquely backward and outward to the right in the plane of the antero-sinistro-oblique pair of canals; the slow component of vertical nystagmus upwards being the resultant of two pulls, one pull obliquely forward and outward to the right, the other pull obliquely forward and outward to the left.

Reference to the complicating element of voluntary gaze in different types of nystagmus cannot be made in a communication of this brief nature. It will be treated of in a subsequent paper.

* It will be apparent on closer study of the matter that absolutely correct graphic representation of the conditions of vestibular balance and imbalance involves the construction of a three-armed scales, the first arm in the transverse (or right-and-left) direction of the head, the second arm obliquely forward and outward to the right, 45 degrees off the transverse, the third arm obliquely forward and outward to the left, 45 degrees off the transverse—all three arms lying in the same horizontal plane. Equilibrium would be represented by six 5-pound weights, one at each end of each arm; imbalance would be represented by 1 pound added to or taken from any end (or any two similarly placed ends, as, for instance, the two anterior ends, or the two laterally placed ends of both oblique arms).

Inasmuch as all nystagmus is rotatory, the present terminology seems unfortunate. It would be much clearer to designate nystagmus as "horizontal," "sagittal," and "transverse," according to the plane in which it occurs.

1130 Main Street.

EFFINGHAM COUNTY

Dr. E. W. Brooks of Beecher City, president of the society, has entered into active campaign to improve the attendance and interest in the organization. The following committees have been appointed, and Dr. Brooks is keeping the mails warm with personal letters to every physician in the county urging him to join the society.

Committees appointed for 1912: Program and scientific work: Dr. E. W. Brooks, Beecher City; Dr. C. C. Holman, Effingham; Dr. E. C. Lorton, Shumway. Public press, Dr. F. Buckmaster, Dr. C. F. Burkhardt, Dr. H. Taphorn, all of Effingham. Legislation, Dr. E. L. Damron, Effingham; Dr. L. C. Taylor, Springfield; Dr. Geo. Haumesser, Shumway; Dr. J. C. R. Wettstein, Effingham. Library and post graduate study, Dr. F. W. Goodell, Effingham; Dr. C. D. Simmons, Teutopolis; Dr. J. G. Allen, Edgewood. Public health and hygiene, Dr. E. A. Bing, Altamont; Dr. P. J. Cromwell, Effingham; Dr. T. J. Dunn, Elliotstown. Medical economics, Dr. Holson, Farina; Dr. Henry, Effingham; Dr. Bassett, Farina; Dr. Tinsley, Beecher City. Arrangements and entertainment, Dr. C. F. Burkhardt, Dr. J. H. Walker, Dr. F. Buckmaster, all of Effingham. Medicolegal, Dr. J. H. Walker, Effingham.

MADISON COUNTY

Regular Meeting Jan. 5, 1912

The January meeting of the Madison County Medical Society, held Jan. 5, 1912, at Edwardsville, although zero weather prevailed, was well attended. It was an enthusiastic and highly interesting meeting and every one in attendance felt fully repaid for the time and trouble it cost. Our new president Dr. E. C. Ferguson, presided with his usual grace and dignity and the business of the meeting was soon out of the way. A committee consisting of Drs. Smith, Cook and Pfeifferberger was appointed to make arrangements for a social meeting and banquet, to be held in Alton, during the month of May. Dr. E. A. Cook introduced a resolution of thanks to the Edwardsville Commercial Club for the free use of its rooms for the several meetings of the society during the past year, which was adopted. Dr. L. G. Burroughs introduced a resolution thanking the press of the county for courtesies extended to us, as a society, in printing notices of meetings, which was also adopted. Dr. F. E. Tully introduced a resolution, which was unanimously adopted, whereby the members of this society placed themselves on record as condemning the action of the city of St. Louis, in trying to dump the garbage of that city, at Stallings, in our county. This was declared not only a nuisance, but detrimental to public health, and our State Board of Health was asked to take such measures as would effectually prevent such injury to our citizens. Dr. Carl E. Black, our principal speaker, was unavoidably detained, but sent Dr. George H. Stacey of the State Hospital at Jacksonville, to read his paper on "Displacement of the Colon." It was a very interesting paper upon the peculiar and unusual subject, and brought on an animated discussion. Dr. Eugene Wahl exhibited an ovarian cyst of considerable size, taken from a patient 16 years old. Our meetings are becoming more instructive all the time.

Regular Meeting, Feb. 2, 1912

The Madison County Medical Society met at Granite City Feb. 2, 1912, with the president, Dr. E. C. Ferguson, in the chair. Present: Drs. Halliburton, W.

H. Grayson, Cook, Oliver, Hirsch, Cowan, Schreifels, Davis W. T., Wedig, Burroughs, Ferguson, Sims, Tully, Scott, Baker and E. W. Fiegenbaum. Visitor: Dr. Geo. B. M. Erwin. On motion of Dr. Cook, Edwardsville was selected as our next place of meeting. Dr. J. Morgan Sims, of Collinsville, read a strong paper advocating the Owen Bill now before congress, aiming to establish a National Health Department. He presented many telling arguments why such a department should be established and urged the members to become a unit in supporting the measure. Dr. Halliburton, of Alton, opened the discussion and expressed the opinion that national reciprocity or possibly international reciprocity might be the result of the enactment of this bill. He closed his remarks by introducing the following resolutions.

Resolved, That the Madison County Medical Society heartily endorses the Owen Bill and hereby calls upon our Senators and our Representative in Congress to use their influence and their vote to secure the enactment of said bill into law, and be it further

Resolved, That our secretary be instructed to transmit a copy of these resolutions to the above named representatives, and also to Senator Owen to show our appreciation of his efforts.

Dr. L. G. Burroughs, of Collinsville, was the next speaker and in a very forceful address advocated the passage of the bill claiming that it would be the first step to secure to the doctor protection from the illegal patent medicine vendor and quack, who now prey upon an unsuspecting and gullible public. He also moved that the members write individual letters to our senators and to Congressman Rodenburg urging them to assist in the passage of this measure by all honest means in their power. After a general discussion of the subject the meeting adjourned to meet in Edwardsville, on March 1.

E. W. FIEGENBAUM, Secretary.

THE OWEN BILL

J. MORGAN SIMS, M.D.

COLLINSVILLE, ILL.

In bringing the Owen Bill before the society to-day, it is not my aim to enlighten you upon a subject of which you have no knowledge, but, if in its discussion we can be made to more fully realize its meaning as regards the health and happiness of this and future generations, then I shall feel grateful. On April 6, 1911, Senator Robt. Owen of Oklahoma introduced into Congress a bill to create an executive department of the Government to be known as the Department of Health. All of you, no doubt, have read the bill, but I deem it expedient that I give you a synopsis of it, reading in full one or two sections relating to its province and duties, for it is in these we are most interested and it is these sections that refute every claim made by those that are opposing the bill's passage. It is as follows:

SECTION 1. Provides for the creation of an executive department to be known as the Department of Health, of which a Director of Health appointed by the President shall be the head.

SEC. 2. Provides for an Assistant to be known as the Commissioner of Health, and for the usual chief clerk and other department employees and for the auditing of accounts.

SEC. 3. This I will read in full: That it shall be the province and duty of the Department of Health to foster and promote all matters pertaining to the conservation and improvement of the public health and to collect and disseminate information thereto. *Provided*—that this act shall not be construed as attempting to authorize the Department of Health to exercise or attempt to exercise without express invitation from the chief executive or other proper authority of the State, any function belonging exclusively to such State, or to enter any premises in any state without the consent of the owner or occupant thereof; but the Director of Health, upon request of the Chief Executive or other proper

authority of any State, Territory or District of Columbia, or any insular possession, may detail for limited periods an officer or officers, employer or employees, from the department of Health to assist the health authorities of such State, Territory, District, or insular possession in protecting and promoting the health of the people of such jurisdiction.

And, *Provided further*, That the department of Health established by this Act, shall have no power to regulate the practice of medicine or the practice of healing; or to interfere with the right of a citizen to employ the practitioner of his choice, within any State of the Union, and all appointments within the Department, shall be made without discriminating against any school of medicine or healing.

SEC. 4. Provides, for the transfer to the new department, the Public Health and Marine-Hospital Service, Bureau of Chemistry in part, the Division of Vital Statistics, the Bureau of the Census, and all those parts of other departments pertaining to public health, except the Medical Departments of the Army and Navy.

SEC. 5. Provides for eight Bureaus as follows: Sanitary Research; Child Hygiene; Vital Statistics; Food and Drugs; Quarantine; Sanitary Engineering; Government Hospitals; Personnel and Accounts.

SEC. 6. Provides that the President is authorized to detail from any of the several departments, officers and employees, when requested by the Director of the Department of Health to carry into effect the purpose and intent of this act, when the same can be done without prejudice to public service.

SEC. 7. The Director of Health may in his discretion and with the approval of the president, appoint an advisory board of not more than seven members to confer with him from time to time as he deems necessary; the members of said board shall be selected by reason of their special knowledge in matters pertaining to public health and for their term of office, salary, etc.

SEC. 8. Provides that the Director of Health may when in his judgment public interest would be promoted, invite the Boards of Health of all or any States, Territories, or District of Columbia (each sending one delegate) to confer with him as an Advisory Board.

SEC. 9. That the functions of the several bureaus are not limited or changed.

SEC. 10. Provides for annual reports of the Director of Health.

SEC. 11. Provides for appropriation to carry into effect the necessary changes.

SEC. 12. For repeal of all acts conflicting with this act.

SEC. 13. Provides that this act take effect after July 1, 1912.

By bringing all bureaus pertaining to public health under one head, the advantages are many and apparent to all who have given the subject any thought whatever. By so doing we will have better organization, which means better work, more work and more accomplished, cheaper administration and less discord. That discord does exist now, is shown by the report of the committee that was appointed to investigate the charges against Dr. Wiley last summer, which in part is as follows: "That discord exists in the Bureau of Chemistry to the extent that it lowers discipline, impairs efficiency and has added cost to administration and will require positive and well considered reorganization to restore the efficient service to which the public is justly entitled." Then with concentration of forces, having a single purpose in mind, we may expect at least an equal show with the veterinary surgeon, who upon application can have the Government examine into any disease which may break out among stock and assist in establishing methods to stamp it out, and prevent its spread. We will have a more rigid enforcement of those laws relating to public health, that we may eventually prevent a condition which one editor in this State speaks of, when he says, "That walking our streets every day are people afflicted with a disease more deadly than leprosy, and this with all our present day knowledge and boastful enterprise." It is not from lack of knowledge that we permit a condition of public places of amusement and public conveyances that scatter contagion and infection which is yearly sending to untimely graves thousands of our people.

It is not from lack of knowledge that we are allowed to eat adulterated foods, tainted meats, or drink tuberculous milk. It is not from lack of knowledge that patent medicines are allowed to be sold, sending thousands of innocent children to an early grave and making drug fiends of hundreds of adults thereby wrecking their lives; the loss of these lives is far dearer to us than the loss of forests or the waste of soil, and yet these conditions have been neglected to a greater extent than has the preservation of our natural resources, our forests, our streams or our soil. The greatest public asset we have is health, yet health and life itself have been sacrificed for the dollar. The very ones that are fighting the passage of the bill are doing so because it will interfere with their money interests, and not because they fear the people's liberty will in any wise be interfered with; not from any patriotic standpoint, not because they fear a doctors' trust will be formed, for the most stupid imbecile with as much as a thimbleful of brains who had ever read the bill would know better. In the first place there will be no bureaus that do not already exist and their functions are not changed in the least. No one has heretofore claimed that they were unconstitutional, or that they aided in the formation of a doctors' trust, and any school boy knows that the Government has no right in any way to interfere with our personal rights, so long as they are not prejudicial to the rights of others. It is a constitutional right in this grand old country of ours that man can serve God after the dictates of his own conscience and choose the doctor he pleases to treat him when sick. If at any time the Government interferes with the liberty of any one in the practice of medicine, it will be the same sort of interference that it makes with counterfeiters or criminals of other character; yet if any one should suggest that all police and detective departments should be abolished because they interfere with the liberty of these people, do you suppose their suggestion would meet with serious consideration? Then let us consider the character of some who oppose the bill. Take the so-called League of Medical Freedom. Who are some of its officers and founders?

B. O. Fowler, president and one of the founders, was president of R. C. Fowler Medicine Co., a patent medicine concern.

R. C. Fowler, its second vice-president and one of its founders, a notorious swindler and gold brick man, a manufacturer of diamonds whose latest arrest was in 1908.

Dr. C. S. Carr of the Peruna Drug Company.

Chas. Huhn, officer in a cooperative patent medicine concern. I could give you many others but these are sufficient to show the character of those who founded the league. One does not have to stretch his imagination to see why they oppose the bill, or to see that it is not the public interest they have at heart. Then I want to urge every doctor of this society to use his every effort in the behalf of the Owen Bill; write or see your congressman and other congressmen that you know, so that when next July shall have come and gone, there will be established at the seat of the Government, a Department of Health, to the end that we will have better knowledge and more rigid enforcement of those laws relating to public health, that we may eventually be able to stamp out all known preventable diseases. Then we can have that freedom God intended us to have, to be free from disease, free to enjoy life, and live its allotted length in health, happiness and contentment.

McLEAN COUNTY

The regular meeting of the McLean County Medical Society was held in Council Chambers, Bloomington, Ill., Jan. 4, 1912, the president, Dr. R. A. Noble, presiding. The minutes of the October, November and December meetings were read and approved. On motion the dues for 1912—local and state—were fixed at \$3.50 per member. The board of censors reported favorably on the applications of Drs. E. R. Herriman of Stanford, George H. Small of LeRoy, Wm. T. Williamson

of Lexington, and Charles H. Zorger of Bloomington, Ill. On motion report of board of censors accepted and membership granted to the above named gentlemen. In report of cases Dr. Noble exhibited an appendix of enormous proportions. Dr. E. L. Brown read a very interesting paper on "Cause and Prevention of Puerperal Fever."

While the weather was very cold, yet, old McLean County Medical Society was equal to the occasion and had a good meeting. The other essayist of the evening informed the secretary that he was too busy to write his paper. We have noticed the busy men usually write the best papers. Let us hope the doctor will find time to favor us later. Our membership has increased from 75 to 83.

E. L. BROWN, M.D.

CAUSE AND PREVENTION OF PUERPERAL FEVER

The cause of puerperal fever is always an infection of some wound of the birth canal. This infection may be local or general. Local infection of any wound or the placental site, or of retained clots, may be remedied by local cleansing and disinfection. General infections are those where the germs entering through some wound pass deep into the tissues or the blood stream. These must be fought chiefly by general rather than by local treatment. The infecting agents are varied and often mixed; the chief of these is the streptococcus, occurring in nearly half the cases and always in the more serious cases. Next in order as a causal agent is the colon bacillus. Then the gonococcus and then the staphylococcus, and occasionally a few others.

Since infection always occurs through wound surfaces, then it follows that any methods of preventing unnecessary wounds, or of keeping uninfected the natural or accidental wounds will lessen the number of fever cases.

First then, wounds and their prevention. Wounds may be classified as natural, accidental and intentional. The natural are the placental site, and the minor abrasions of cervix and hymen in primipara. The accidental are the tears we cannot prevent, the ordinary lacerations. The intentional are episiotomy and symphysiotomy.

Wounds of the cervix and perineum are often caused by the extremely strong pains of precipitate labor. These should be avoided if possible by telling woman not to bear down; by giving chloroform enough to lessen the force of the pains; by holding back the birth of the head until the parts soften and dilate easily; and by careful support of the perineum. Wounds are also caused by a malposition of the child. This can sometimes be changed to a more favorable position. A breech presentation can be changed to a vertex, if the waters have not broken. If it can not be turned, the back of the child should be carefully kept uppermost to save trouble in delivery of the head. In vertex presentations a little aid to nature in rotation or tipping of the head will often save both time and trauma.

Then wounds are caused by the shoulder after one has with skill and care gotten the head safely delivered. Usually one can drag the child out by the head easily, but it is not wise to do it. It is better to clean the eyes and nose and wait for the next pain, unless the cord is around the neck making the face blue. Then lift the head forward and support the perineum. It helps often either to keep the anterior shoulder above the pubis until the posterior one is out; or to bring the anterior shoulder well down under the pubis and pressed firmly against it; so that in either case both shoulders should not pass the vulva at the same time.

Wounds are frequently caused by the use of forceps. I consider the forceps to be a means of saving the life or of preventing serious injury of mother or child. But there is always greater danger of bruises and tears when instruments are used. Hence I think their use should be limited to certain indications.

Indications not to use the forceps on the part of the doctor: Because he is in a hurry, or tired, or has a dinner engagement almost due, or just because one can and likes to use them, or perhaps likes more the increased fee he can charge if he does use them.

In all cases where instruments must be used, one should wait until the cervix is fully dilated unless the immediate delivery of the child is urgently indicated. Many times forceps cause needless tears when in their use more strength than skill is applied.

A head that can not be dragged through, may be very easily delivered if one remembers to rotate it as the head descends; or perhaps better, after getting the head loose from or through the narrow entrance or upper straight of the pelvis, remove the forceps and allow the head to rotate itself before re-applying them. Then, too, there is less danger of an external tear if one removes the instruments before the head passes the vulva.

To avoid infection means to keep out all germs so far as possible. To this end the patient, her clothing and her bed should be clean. The physician and nurse should take every care to keep aseptic everything that comes in contact with the vulva. The patient should have at least a local if not a general bath as soon as labor begins. Her bowels and bladder should be emptied. Sometimes one sees cases where the bed is not clean. Even here with a clean sheet or other clean cover for a Kelly pad or a newspaper pad and something clean for a cover for the vulva, it is possible to keep the field of operation reasonably clean. Long hair should be clipped. Gloves should always be worn when making examinations.

Very many cases of infection are due to the examining, therefore one should make as few examinations as is possible and yet keep intelligent control of the case. One should practice making a diagnosis of presentation and position by external abdominal examination.

One's hands should be disinfected as well as the time and accommodation of the place will permit. Then with boiled glove and a lysol solution one need not fear causing harm whatever manipulation may become necessary. Give no post-partum douche unless stitches have been used, and then take special care that both syringe and solutions are sterile. Give the douche yourself unless you have a nurse you know can be trusted to be painstakingly careful. Then to be doubly safe it is my custom to insert a suppository of iodoform and boric acid after each douche.

Regular Meeting Feb. 1, 1912

At the last meeting of the McLean County Medical Society, held Feb. 1, 1912, Dr. E. P. Sloan, Bloomington, read a very interesting paper on "Review of Surgery of 1911," and the following gentlemen were elected to membership in the society: Dr. J. I. Henline, Bloomington; Dr. John J. Condon, Bloomington; Dr. Wm. McIntosh, Anchor, Ill., and Dr. G. W. Rudolph, Cooksville.

THOS. O. CANTRELL, Secretary.

MORGAN COUNTY

The Morgan County Medical Society met at the Public Library, Jacksonville, Illinois, at 8 o'clock on the evening of Feb. 8, 1912, Dr. George Stacy, vice-president, in the chair.

The subject of the evening, "Kidney Diseases" was presented by Drs. C. E. Cole, George Stacy and F. A. Norris. Dr. Cole presented "Clinical Features," Dr. Stacy "The Pathology," and Dr. Norris "The Surgical Conditions." The manner in which these men presented the subject of kidney diseases reflects credit upon them.

The subject was discussed by Dr. A. L. Adams in relation to eye changes in kidney diseases. Dr. Hairgrove discussed surgical conditions. Drs. Waltman, Hardesty and Crouch, the clinical features.

Members present were: Drs. Stacy, Black, Milligan, Dewey, Ogram, Hardesty, Cole, Adams, Metcalf, Hairgrove, Norris, Woltman, Gregory, Bowe and Treadway.

ROCK ISLAND COUNTY

Regular Meeting, Oct. 17, 1911

The regular bi-monthly meeting of the Rock Island County Medical Society was held at the Manufacturers Hotel, Moline, Tuesday evening, Oct. 17, 1911. Minutes of the August meeting were read and approved. Bill for printing postals (\$2.00) was allowed. Announcement was read from the American Red Cross Society regarding the competitive essays of the Russian "Marie Feodorovna" prizes for 1912. A communication was read from Dr. E. W. Weis regarding the Dr. Hubert Work resolution which provided that a membership in the County Society carried with it *ipso facto* a membership in the American Medical Association. This resolution was then adopted. The proposed amendments to the State Medical Society Constitution were read and Drs. First, Lamping, Seids, Bennett, and the secretary were appointed to investigate the same. Drs. Craig, Williams and Bennett were appointed as a committee on the application for membership of Dr. C. J. F. Rochow of Rock Island. Very interesting and entertaining papers were then read as follows: "Korsakows' Syndrome with Synopsis of Cases," Dr. F. B. Clarke, Watertown. "The Word-Association Test," Dr. C. F. Read, Watertown. "Medical Organization," Dr. J. F. Percy, Galesburg. Present: Drs. Eddy, Lamping, Bennett, Ostrom, Norman, Craig, Chapman, Love, Leipold, Ludewig, Williams, Martin, Souders, Clarke, Snively, Asay, First, Foster, Arp, Seids, De Silva, Mueller. Visitors: Drs. Rochow, Rock Island; Percy, Galesburg; Taylor, Moline; Read, Watertown, and Dr. Brubaugh.

ALBERT N. MUELLER, Secretary.

Regular Meeting, Dec. 12, 1911

A regular meeting of the Rock Island County Medical Society was held Tuesday evening, Dec. 12, 1911, at New Harper Hotel, Rock Island. Minutes of the October meeting were read and approved. Dr. First, chairman of the committee on proposed State Constitutional Amendments, reported that our delegates be instructed to vote against all such amendments. Carried. The application of Dr. C. J. F. Rochow was presented and he was unanimously elected to membership. Applications from Drs. C. E. Donahoo, East Moline; H. J. Smith, Watertown; L. C. Moore, Reynolds, and M. C. Hawley, Watertown, were read and committees appointed. Drs. Ludewig, Snively and Wright were appointed to draw up appropriate resolutions on the death of Dr. W. B. Martin of Sherrard. Bills from the Manufacturer's Hotel and Hensley, florist, were allowed. Dr. Eddy reported that Mrs. W. B. Martin wished to extend the society her thanks for flowers and assistance rendered in her late sorrow. Dr. E. M. Sala then read a paper on "European X-Ray Work." This was followed by a paper on "Pellagra" by Dr. F. B. Clarke. By unanimous vote it was decided to accept Dr. Johnson's invitation to hold the next meeting (February) at East Moline. Present: Drs. Ludewig, Souders, Eddy, Sala, Love, Leipold, Peterson, Lamping, Clarke, First, Snively, Chapman, Craig, Johnson, Norman, Wright, Seids, De Silva, Arp, Bennett, Mueller. Visitors: C. E. Donahoo, East Moline, M. C. Hawley and H. J. Smith, Watertown.

ALBERT N. MUELLER, Secretary.

SANGAMON COUNTY

The regular annual meeting of the Sangamon County Medical Society was held at the Lincoln Library, Monday, Jan. 8, 1912, when the following officers were elected: President, S. E. Munson; vice-president, C. P. Colby; secretary-treasurer, H. C. Blankmeyer; delegate to state society, S. E. Munson.

Dr. L. C. Taylor demonstrated an interesting specimen of tumor of brain.

STEPHENSON COUNTY

The Stephenson County Medical Society held its annual meeting at the Freeport Club, Freeport, Ill., Feb. 13, 1912. It was preceded by a luncheon which was attended by twenty-seven physicians from Freeport and adjoining cities. The guest of honor was Dr. Carl Black of Jacksonville, who read two papers. Dr. R. J. Burns was chosen president of the society, Dr. J. Sheldon Clark, secretary, and Dr. D. C. L. Mease, delegate to the meeting of the Illinois State Medical Society.

A resolution was adopted instructing the delegate to the state meeting to support Dr. Black's proposed amendments to the constitution, which are designed to prevent the Chicago members from dominating the society.

UNION COUNTY

At the annual meeting of the Union County Medical Society, the following officers were elected: President, Dr. L. J. May, Cobden; vice-president, Dr. A. J. Lyerle, Jonesboro; secretary-treasurer, Dr. E. V. Hale, Anna; board of censors, Dr. S. C. Martin, Anna; Dr. J. J. Lence, Jonesboro; Dr. W. E. Lingle, Cobden. Delegate, Dr. E. Vincent Hale, Anna.

VERMILION COUNTY

The February meeting held in the City Council chamber, Feb. 12, 1912, was called to order by President Dr. L. B. Russell, at 8:30 p. m. The minutes were read and approved as read. The application of J. H. LaGrange was not voted upon owing to the fact the censors were not ready to report. The scientific program was then opened by Dr. Robt. Clements on the subject of "Some Laboratory Work (with demonstration) the Practitioner Should Know."

Dr. Clements took up the various tests of urine for sugar, albumin, bile, indican, etc., demonstrating each to the society. He talked at length on the use of the microscope in examining the urine. Referring to the staining of tubercle bacilli he pointed out why many fail in getting results.

Dr. A. M. Miller opened the discussion.

Dr. Leo. V. Fairhall read a very interesting and instructive paper on "Serum and Vaccine Treatment." In this paper he touched upon the specific nature of anaphylaxis and the toxic principle of proteins. There were many valuable new points brought out.

Dr. E. E. Clark gave quite a lengthy discussion on this paper, relating in an interesting manner a number of cases in which he has made use of the vaccines. Dr. Clark makes his own vaccines. Owing to the late hour we adjourned, without further discussion. Number present 28.

SOLOMON JONES, Secretary.

WILLIAMSON COUNTY.

The Williamson County Medical Society met in the City Hall in Marion. January 23 at 1 p. m., Dr. Vick presiding. Minutes of the previous meeting were read and approved. The following physicians were present: Drs. Perry, Boles, Walker, Springs, Clark, Hartwell, Casey, Hiller, Edwards, Vick, Parmley, V. A. Baker, Miller. The president appointed for the board of censors for 1912, I. C. Walker, A. M. Edwards, W. H. Perry. The board of censors presented the applications of three physicians: G. C. Chamness, Frank Deason, A. C. Ragsdale, and all were unanimously elected members of the Williamson County Medical Society. A motion was made that we elect Dr. F. D. Clark, who is 74 years old

and retired, an honorary member of the society. This motion carried and Dr. Clark was unanimously elected an honorary member.

Dr. Boles lead an interesting discussion on the "Non-Surgical Treatment of Inguinal Hernia," after which Dr. Walker read a paper on the "Surgical Treatment of Inguinal Hernia." The subject of hernia proved to be one of much interest, and many helpful points were brought out in the two able papers and the general discussion which followed their reading.

Book Notices

THE SURGICAL CLINICS OF JOHN B. MURPHY, M.D., at Mercy Hospital, Chicago. Volume I. Number I. Octavo of 133 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1912. Published Bi-Monthly. Price per year: Paper, \$8.00. Cloth, \$12.00.

We have received the first number of Dr. Murphy's Surgical Clinics, and have enjoyed reading it from cover to cover. It brings as near as written language can bring the reader into intimate relation with the distinguished Chicago Professor of Surgery. None of our readers pretending to be in touch with the current surgical thought of the day can afford to be without this periodical, which we understand will be issued every other month. Dr. Murphy's distinguishing characteristic is his ability to impart knowledge to his hearers.

THE PHYSIOLOGY OF FAITH AND FEAR, or, The Mind in Health and Disease. By William S. Sadler, M.D. With numerous drawings. A. C. McClurg & Co., Publishers, New York, Chicago, San Francisco. \$1.50 net.

This excellent popular work is the third in Dr. Sadler's series of medical books for the layman. Although the great wave of mental healing which has passed over the country has familiarized the public more or less with the various methods followed, still there is much misapprehension of the subject. Dr. Sadler has written this book to take up the matter of mind-cure from every side and present it in popular language. He not only discusses the rôle the mind plays in healing, but the bodily factors as well, and his positions on both psychology and physiology have been endorsed by leading representatives of those sciences. The doctor is committed to no psychic cult or ism, but he freely and in an unbiased manner discusses the fundamental laws and underlying principles of mental healing. The psychology, the physiology, and the therapeutics of the mental states are fully and plainly presented. The latest practical methods of psychotherapy are fully treated. Many original diagrams and illustrations serve to make the text additionally clear even to the uninstructed layman.

THE TAYLOR POCKET CASE RECORD. The Medical Council Co., 42nd and Chestnut Streets, Philadelphia, Pa. Price, \$1.00.

Under this title Dr. Taylor has arranged an excellent manual and blank forms for the use of physicians which we can recommend very highly. It is preceded by a syllabus probably adopted from Strumpell's German work which in itself is worth the price of the book, and which if conscientiously and intelligently followed will assist every practitioner in making a complete and accurate diagnosis. Card systems are good but not available for bedside work but the Taylor Record can be used under all circumstances and places.

BLAIR'S POCKET THERAPEUTICS. Thomas I. Blair. Price, \$1.00.

This is a companion to the Pocket Record and equally as valuable. It is brought right up to date and contains many valuable suggestions for the treatment of all ordinary diseases. The advice given is conservative and sufficiently varied to prevent routine practice.

NEWS OF THE STATE

NEWS

—The entertainment of the Infant Welfare Society, February 14, at the Marquette Club, Chicago, netted \$2,000 for the association.

—Tuberculosis Day was held in Joliet, February 14, and a meeting in the Joliet Theater, under the auspices of the Joliet Antituberculosis Society, was addressed by seven physicians.

—The trustees and medical board of St. Lukes Hospital, Chicago, gave a dinner, February 10, at the Chicago Club, in honor of Dr. John E. Owens, who on that day completed his fiftieth year in the practice of medicine.

—Dr. Woodside of Johnston City had the misfortune of losing his office by fire February 3. He has made arrangements for a successor and expects to sail the first of March for a year's postgraduate in Vienna, Paris, Berlin and London.

—The management of the Oconomowoc Health Resort announces the opening of a new building. The new part comprises twenty-five guest rooms and a gymnasium. Eight rooms with special baths and private porches have been isolated for the care of acute mental cases.

—The officials of the Suburban Hospital Association, Oak Park, announce that in a short time work will be begun on the new hospital on Ontario Street and Austin Avenue, as the suit brought by property owners has been decided in favor of the Hospital Association.

—The Medical Womans Club of Chicago has completed arrangements for a bureau of information which will supply free of charge reliable information and advice regarding the welfare of mothers and children. The bureau will be operated in connection with the John Crerar Library.

—John P. Riggs, M.D., of Media, Henderson County, Ill., has entered the contest for the Fourteenth Congressional nomination against the Hon. Clyde H. Tavenor. Dr. Riggs is well known also in Warren County, where he spent many years practicing as a veterinarian before moving to Media.

—Dr. John W. Wainwright of New York has purchased two medical journals, the *American Practitioner and News* of Louisville, Ky., and the *New England Medical Monthly* of Boston, and will combine these two journals into one, giving the new one the title of *The American Practitioner*, incorporating, etc., and issue from New York City monthly, the first appearing March, 1912.

—The real merits of "Faith Healer" Bill Smith's work lie in the fact that out of the large number he treats with his hocus-pocus-presto-change treatment, he is able to impress on the limited gray matter in the domes

of a few chronic hysterics, mostly females, the important fact that their ills are only imaginary; hence they take up their beds and go forth praising the name of Billy Reuben Smith forever and forever.

—At the annual meeting of the Chicago Tuberculosis Institute, held January 20, directors were elected, including Drs. Robert H. Babcock and Frank S. Johnson, and the plans of the institution for the year were announced, namely, to gain the cooperation of employers of labor so that the employees of all kinds can be examined for tuberculosis and to have a traveling exhibit bearing on the nature, prevention and care of tuberculosis, shown in the central locations of the city.

—Dr. W. A. Mudd of Athens, Menard County, was attacked, February 9, by one Mack Thomas, and seriously stabbed on the head and body. Dr. Mudd had been treating the wife of this man, and had no intimation that there was any hard feeling toward him. He was seated in the blacksmith shop where he had gone to have his horse shod, when Thomas approached him under the influence of liquor, and without warning made the attack. Happily the injuries were not serious and Dr. Mudd will be able to resume his practice.

—The State Board of Administration, the State Charities Commission, the State Civil Service Commission and the superintendent of the seventeen state institutions of the charitable group at a meeting held in Springfield, February 8, recommended that the state should create a distinctive class of nurses especially trained for state service in the care and treatment of the insane, and appointed a committee consisting of Drs. William L. Athon, Anna; Sidney D. Wilgus, Hospital; and Eugene Cohn, Peoria, to outline a constructive course of study for nurses in hospitals for the insane, to report at the November conference.

PERSONALS

DR. SAMUEL M. WYLIE and wife, Paxton, have left for southern Alabama.

DR. W. W. WOOLEY, Peoria, who has been ill with rheumatism, is convalescent.

DR. LEWIS L. MCARTHUR, while operating, February 16, at Michael Reese Hospital, was robbed of his watch and chain, a valuable ring and a considerable amount of money.

DR. J. B. MURPHY, Chicago, recently returned from a trip to Cuba and the Canal Zone. While in Havana he was tendered a banquet by the local profession.

REMOVALS

Dr. Alice B. Brown has removed from Chicago to Winnetka.

Dr. Omar Rees has removed from Ogden to Knightstown, Ind.

Dr. C. W. Page has removed from Milford to Greensburg, Ind.

Dr. Edith B. Lowry has removed from 39 West Adams Street, Chicago, to St. Charles, Ill.

Dr. Margaret B. Thompson has removed from 3302 Cottage Grove Avenue, Chicago, to Phoenix, Ariz.

Dr. F. W. Kerchner has removed from Glen Carbon to Prairietown, Ill. (P. O. Dorsey, Ill., R. F. D.).

NEW INCORPORATIONS

Lakeside Hospital, Chicago; capital increased from \$75,000 to \$200,000.

PUBLIC HEALTH

—Vital statistics in Illinois have never been accurate or complete enough to secure recognition from the United States Census Bureau as a "registration state." It may not be generally known that a person may be born, live for years, die and be buried, in many counties in this state without any official record of those primary facts as to his existence. Cities of the state having ordinances requiring the filing of a death certificate before a license can be issued permitting burial, secure the data as to death and are therefore recognized as registration cities by the Census Bureau. The recording of births is far less complete than the records of deaths. The Cook County Board of Commissioners have not, previous to this year, appropriated any funds to pay for recording birth certificates as required under the law of 1903. As a result less than 40 per cent. of the births in Cook County have been recorded. The theory that physicians were bound by ethics and their duty to their patients to report births without pay has induced many to make the reports even when they felt that it was an imposition. Now comes the supreme court of Ohio in *State v. Boone*, 95 N. E. R. 924, and holds that the requirement that a physician or midwife report births or deaths in the detail required in the Ohio certificates is unconstitutional and void. Apparently the court would hold a simpler report legal but drew the line at details which the physician could not furnish of his own knowledge. Further, that under the guaranties of the Great Charter of the Northwest Territory the state had no right to draft a citizen into particular service without substantial compensation.

The English law places the onus of reporting births on the parent and house-holder and only indirectly on the physician who can generally avoid any penalty by claiming that he had reason to believe the parent had made the report.

The Cook County Board, in its budget for 1912, appropriated \$5,000 for the payment for birth certificates recorded within thirty days of the births during 1912. While this will not, of course, be enough to pay for all the certificates that will be offered, it will show that the board recog-

nizes the principle and no doubt funds will be provided later to pay any further legal claims that arise. It will also place the reporting of births on an equitable basis which should be recognized by the profession.

HAS NO BIRTH RECORD; BARRED

WHY A NEW HAMPSHIRE MAN IS HAVING TROUBLE TO TAKE AN OFFICE

[*By the Associated Press.*]

Manchester, N. H., Jan. 4.—George A. Wagner of this city has struck a peculiar obstacle in the preliminaries necessary to his taking the office of probate judge, to which he was recently elected. He cannot find any record of his birth, and the law requires that a certificate of birth must be filed with the secretary of state before a judge can be commissioned.

Mr. Wagner has always been led to believe that he was born in Manchester, May 28, 1873. His parents told him and he has seen it so stated in print many times, but when he called at the office of the city clerk he was told that there was no record of his birth on file there.

The above is only one of the many instances each year where failure to register a birth causes serious trouble.

How about your children? Are their births registered? If not, you are not treating your children right.

An official birth record is best proof of legitimacy, of descent, of right to inherit and of age for schooling, for work, for voting and for marriage.—*From Bulletin Chicago Department of Health.*

—The throat of the young child is surrounded by a ring of lymphatic tissue, consisting of glands and vessels. The ring contains three principal groups: (1) adenoids, located in the vault of the pharynx; (2) the tonsils, lying between the pillars of the fauces; (3) Luschka's tonsil, at the base of the tongue. In the normal throat none of these glands is developed enough to project into the cavity of the throat and their exact function is a mooted question.

In a certain percentage of children, the adenoid and tonsil tissue develops excessively from the second to the fifth year. It is generally agreed that this tissue, when excessive in amount, forms a favorable site for the growth of bacteria, thus rendering the child more susceptible to the attack of the contagious diseases, and at the same time makes the prognosis of these diseases more unfavorable.

The symptoms of adenoids are dependent on their *size in relation* to the capacity of the nasopharynx and to their *position in relation* to the postnasal Eustachian orifices. Thus, if the adenoid obstructs the free passage of air through the nasopharynx, the child becomes a mouth-breather, and the irritation due to breathing air not properly humidified causes congestion of the mucous membrane from the mouth to the bronchial tubes. If even a small adenoid growth so presses on the Eustachian prominence or orifice as to interfere with the normal function of that tube, the ventilation of the middle ear is obstructed and ear symptoms follow. Thus the child, besides having one of its five senses directly impaired, has all its functions interfered with through the diminished supply of air. The excessive secretion of mucus in the throat,

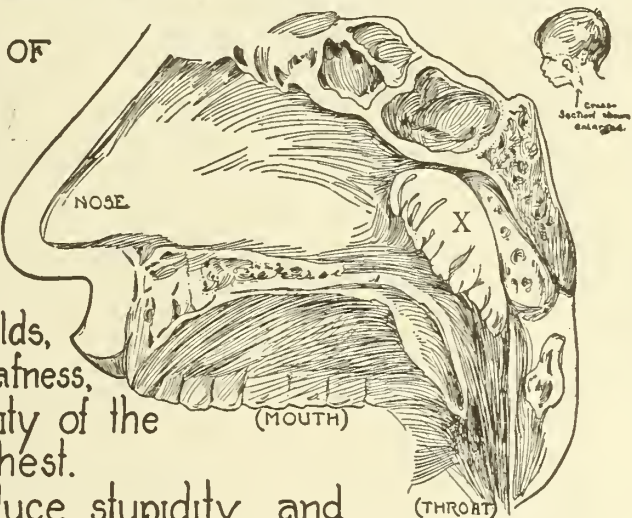
nose and bronchial tract is a common symptom of adenoids. Disuse of the nasal passages for breathing on account of blocking up of the nasopharynx causes an atrophy of the nasal structures with a "flatness" of the face that is characteristic.

The effect of adenoids on mental action has been noted by teachers generally in the past few years. L. P. Ayres, in "Laggards in Our

ADENOIDS

LOCATION OF ADENOIDS SHOWN X

ADENOIDS
cause mouth-breathing,
frequent colds,
catarrh, deafness,
and deformity of the
jaw and chest.



They induce stupidity and
stunt mental and physical growth.

**DON'T LET YOUR CHILD
BE SO HANDICAPPED.**

Removal of Adenoids
is a simple and brief operation.

**GIVE YOUR CHILD
A CHANCE TO BREATHE.**

Schools," notes a retardation of 14 per cent. in children with adenoids, as compared with normal children. Of the school children examined for physical defects in our schools in 1909, thirty-three in each 1,000; in 1910, thirty-nine, and in 1911, forty-seven per 1,000 were found to have adenoids. How much of expense does this mean to the city for those victims who remain in school longer than their normal classmates to make the grade? How much of a handicap are the wasted efforts and

deficient education to those who give up the unequal struggle and drop out? These questions deserve careful study. The least a parent can do when notified that his child has this handicap is to consult his physician with a view to having the growth removed. The cut (on this page) of the *Bulletin* is reproduced from one of the educational posters of the Department.—*From Bulletin, Chicago Department of Health.*

—The president has selected Dr. Rupert Blue as successor to the late Walter Wyman as surgeon-general of the Public Health and Marine-Hospital Service of the United States and his nomination was sent to the senate January 9. Dr. Blue was born in South Carolina in 1868 and was graduated from the University of Maryland in 1892. He became an intern in the United States Marine-Hospital Service in 1892 and was commissioned assistant surgeon on March 3, 1893. He became a passed assistant surgeon four years later and was made surgeon May 1, 1909. For the first eight years after Dr. Blue entered the service, he performed the usual service duties at various points in the United States. In 1903-04 he was detailed as executive under Surgeon Joseph H. White, who was in charge of the operations in eradicating bubonic plague in San Francisco, and there proved his ability as an executive officer. In 1905 he was detailed as a district officer during the yellow fever epidemic in New Orleans, and in 1907 served as director of sanitation at the Jamestown exposition and here again showed his ability as an organizer and executive officer by reconciling the divers interests at the exposition and making its sanitation a pronounced success. From Jamestown he went again to San Francisco, where he was placed in charge of the city and again rendered excellent service in the work against bubonic plague and here as before handled the situation admirably, avoiding friction and working in excellent accord with the municipal and state authorities. Dr. Blue's strong points have always been in preventive medicine and quarantine, rather than in the details of hospital service. He recently made a tour of inspection of Europe, in which he studied especially the question of emigration and quarantine management and while abroad he attended a course of lectures at, and graduated from, the London School of Tropical Medicine. Afterward he made a tour of South America, in which he studied the possibility and routes of importation of bubonic plague and yellow fever from these countries. His last detail was at Honolulu, from which he was recalled to Washington when the question of the successorship to the surgeon-general became prominent. Dr. Blue has an engaging personality, is an excellent executive officer, a good organizer and has to a marked degree the faculty of making friends and of reconciling opposing interests.

MARRIAGES

OLIVER J. FLINT, M.D., to Miss Josephine Stooddy, both of Princeton, Ill., January 12.

JOHN MOCKLER CONROY, M.D., to Miss Agnes Jane O'Connor, both of Chicago, January 15.

FRANTZ H. HARMS, M.D., Chicago, to Mrs. Elsie Junk Reed, at Waterloo, Iowa, January 9.

GEORGE FREDERICK SORGATZ, M.D., Springfield, Ill., to Miss Katherine Wyth of Cedar Falls, Iowa, recently.

JOHN U. DAY, M.D., Jacksonville, Ill., to Mrs. Bertha Bailey of Ashland, Ill., at Tallula, Ill., January 31.

DEATHS

CHARLES LIESSMANN, M.D., Bennett Medical College, Chicago, 1901; died at his home in Chicago, February 7, aged 51.

JOHN P. McCULLOUGH, M.D., Hahnemann Medical College, Chicago, 1891; died at his home in Paris, Ill., January 22, aged 43.

CHARLES A. DEWEY, M.D., Hahnemann Medical College, Chicago, 1881; died at his home in Chicago, January 23, from myocarditis, aged 55.

HAMPTON STOKES (license, years of practice, Illinois, 1877); a pioneer practitioner of White County; died at his home in Carmi, January 1, aged 70.

ALICE R. HELD, M.D., Chicago College of Medicine and Surgery, 1907; of Chicago; died in that city, Dec. 7, 1911, from lobar pneumonia, aged 40.

AMOS CAMP HALL, JR., M.D., Hahnemann Medical College, Chicago, 1889; died at his home in that city, January 14, from pneumonia, aged 51.

WILLIAM E. CHALSTRAN, M.D., Keokuk (Iowa) Medical College, 1898; of Galesburg, Ill.; died recently and was buried at Galesburg, January 31.

JOSEPH W. EDWARDS, M.D., Rush Medical College, 1854; a veteran of the Civil War; was found dead in his office in Toulon, Ill., January 13, from heart disease.

JOHN H. JACKSON, M.D., Cleveland University of Medicine and Surgery, 1874, died at his home in Peoria, Ill., January 12, from cerebral hemorrhage, aged 62.

HARRIET AVIS YERGIN, M.D., Hering Medical College, Chicago, 1908; of Sterling, Ill.; died in Mercy Hospital, Clinton, Iowa, January 15, from pneumonia, aged 48.

ISAAC POOLE, M.D., Berkshire Medical College, Pittsfield, Mass., 1862; a surgeon in the Navy during the Civil War and the oldest practitioner of Evanston, Ill.; died at his home in that city, January 24, aged 74.

JANE SPENCER MILLER, M.D., Homeopathic Medical College of Missouri, St. Louis, 1880; died at the home of her daughter-in-law, in Moline, Ill., January 9, from senile debility, aged 78.

BROWN FRED SWIFT, M.D., Rush Medical College, 1895; formerly a member of the American Medical Association; died at his home in Chicago, January 19, from pneumonia, aged 42.

S. DARWIN SMITH, M.D., Chicago Homeopathic Medical College, 1896; a member of the Illinois State Medical Society; died at his home in Rushville, Ill., January 20, from heart disease, aged 41.

PETER F. THORNBURG (license, years of practice, Illinois, 1877); formerly a clergyman of the Methodist Episcopal Church; died at his home in Martinsville, January 23, from senile debility, aged 86.

HORACE GRIFFIN ANDERSON, M.D., Rush Medical College, 1890; a member of the Illinois State Medical Society; died at his home in Chicago January 2, from nephritis, a few days after a surgical operation, aged 52.

CHARLES E. DOWNEY, M.D., Northwestern University Medical School, Chicago, 1894: from 1896 to 1900 coroner of Will County, Ill.; died at the home of his parents in Joliet, January 21, from myocarditis, aged 40.

LAWRENCE A. BRUMLEVE, M.D., St. Louis College of Physicians and Surgeons, 1901; a member of the Illinois State Medical Society: for two terms coroner of Effingham County, Ill.; died at his home in Teutopolis, January 19, aged 32.

MARTIN HEKTOEN, M.D., Rush Medical College, 1899; for more than twelve years assistant physician at the Kankakee (Ill.) State Hospital and for some time past night physician in that institution; died at his home in Hospital, January 29, from pneumonia, aged 43.

R. M. C. THROGMORTON, M. D., died at Herrin, Ill., January 24, aged 46. He had been in ill health for about a year. The immediate cause of his death was tubercular meningitis. Dr. Throgmorton had been practicing medicine in Herrin for ten years. Funeral services were held Thursday, January 25, under the auspices of the Masonic and Odd Fellow lodges. Dr. Throgmorton was graduated from the St. Louis College of Physicians and Surgeons in 1898.

JOHN A. HOFFMAN, M.D., of Pesotum, died at the Burnham Hospital in Champaign, February 14. Dr. Hoffman had cholelithiasis with perforation and gangrene of the gall-bladder; he was 44 years of age, a graduate of Miami College, Cincinnati; a member of the Champaign County, Æsculapian District, Illinois State and American Medical associations. He had been elected alternate to the House of Delegates of the State Society.

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ORIGINAL ARTICLES

PREVENTION OF BLINDNESS AND CONSERVATION OF VISION *

THOMAS A. WOODRUFF, M.D.
CHICAGO

ADDRESS BY THE CHAIRMAN

We have met to-night for the discussion of a subject of far-reaching interest, that of the prevention of blindness and the conservation of vision.

In a study of the blindness of this country one is impressed by the fact that from a conservative estimate fully 50 per cent. of it is unnecessary and preventable. The question is asked, what are the forms of preventable blindness, and what can be done to protect those who are in danger of being overcome by such a calamity? Broadly speaking, they may be divided into those occurring as a result of accident and those from disease.

The state should pass laws that will militate against those causes of blindness with its fatal consequences, which may so easily and frequently be prevented.

Illinois stands fourth among the states as to the number of blind. There are about 4,000 blind in the state, of whom 12 per cent. are under 20 years of age, that is, of school age. There are about 1,000 blind people in Cook County, but I am confident that this falls far short of the number, as only those are included in the number who are blind in the strict meaning of the term, and there is no record of those unfortunates who, although able to get around by themselves, are devoid of useful vision to such an extent that, being unable to earn a living, sooner or later become a charge on the state.

There are three degrees of blindness:

First, total, or absolute blindness, in which the light sense is totally abolished.

* Read in a Symposium on "The Prevention of Blindness and the Conservation of Vision," at a meeting of the South Side Branch of the Chicago Medical Society, Feb. 8, 1912.

Second, blindness, where vision in both eyes, with proper correcting glasses adjusted, is of so low a degree that fingers can no longer be counted at about 3 feet, but movement of the hand, or moving objects may be discerned.

Third, practical blindness where moving objects may still be discerned at 9 feet, but where the field of vision has become so impaired that no useful vision remains, and the individual goes about with great difficulty.

The conservation of the eyesight of the children in our schools is a matter of vast importance. The foundation of subsequent eye disease is frequently laid in our schools. Defective vision and eyestrain are the causes of many physical maladies, which render the child dull and mentally incapable of performing the ordinary school tasks.

If a community's best asset is its men and women, no pains should be spared to conserve the eyesight of its boys and girls. In a work so important, it is the duty of the school, the home and the state to act together. If any of these fail to carry out its part in this work, the boys and girls inevitably suffer. Parents are anxious that their children should be healthy and vigorous, and very often they are ignorant in the knowledge essential to promoting this wish. A dull, sickly pupil is a heartbreak to any energetic teacher; but the teacher too is frequently unable through lack of special training to locate the pupil's physical limitations. The state is ready to do its utmost for its future citizens, but stands helpless because there are no ways and means of carrying out its good intentions. In the meantime the children bear the burden, and because nothing is done in their behalf, go through life needlessly and heavily handicapped. The ignorance and indifference of the parents and teachers to the visual defects is a menace to the future welfare of these small people. Few realize that such abnormal conditions are serious in the extreme, resulting in dulness, headache, stupidity and other nervous disorders that go to affect the health of our future citizens. Bodily vigor is impossible; if the child survives at all he is but a miserable second-best of what he ought to be. The pity of it is that these conditions go unremedied when a little timely skill and attention would accomplish so much for the sufferers throughout life.

In Illinois, little organized effort is being made to prevent blindness: that is, as compared with what is taking place in such states as New York, Massachusetts, Pennsylvania and Ohio, where organized effort has been going on for some time, and where the general public has been aroused to the necessity of doing more toward the prevention of the unnecessary loss of sight. Such a campaign should be started in Illinois. The public should be educated to the proper use and care of the eyes.

It is incumbent on those who wish to ameliorate the conditions of a struggling humanity to investigate and eliminate any administrative fault, any kind of neglect, any form of abuse, which may justly be cited as the cause for a single case of unnecessary blindness. Surely any cause which results in such deprivation to a single human being merits the most careful investigation, with a view of such complete elimination that no

person will be deprived of the light, or find himself in a world of unnecessary darkness.

The time for hinting at unpleasant truths is past. No matter how unpleasant the needful truth is to the teacher or to the physician, nor how expensive to the employer, it is time to furnish all the knowledge in our power to make the public see that not only the necessity but the comparative ease of prevention makes it our duty to give all the time and money we can to the work. Life is hard in many ways at the best but to the blind, hardest of all.

DANGEROUS INFECTIONS OF THE EYE

WILLIAM H. WILDER, M.D.

Professor and Head of Department of Ophthalmology, Rush Medical College; Surgeon, Illinois Charitable Eye and Ear Infirmary.

CHICAGO

Much of the blindness of the world is the result of certain infectious diseases of the eyes that in most cases are easily preventable.

It is an astounding fact, and one not generally known, that one-fourth of all the blind children in schools for the blind in this country, as well as in others, are unnecessarily so.

The United States Census for 1900 shows that in this country there were 64,763 blind persons of whom 3,767 were in the state of Illinois. The census returns on this subject for 1910 are not yet available, but will probably show an increase proportionate to the increase of population.

In studying the subject of blindness, one may arrange the cases in three classes:

1. Those that are the result of certain diseases of the optic nerve, inherited conditions, tumors, etc., that are absolutely incurable or non-preventable by any known means.

2. Those cases caused by injuries, inflammation of the deeper structures of the eye, and many that are ascribed to obscure causes. Many cases of this class might possibly be prevented.

3. Cases caused by infectious inflammation of the eyelids and membranes of the eyeball as well as many cases of injuries of the eyes, all of which could be prevented by proper precautions or could be cured in their beginning by proper treatment. In a study of 1,000 blind, Cohn reaches the lamentable conclusion that there were only 225 unavoidable cases, 449 were possibly avoidable, and 326 were absolutely avoidable.

The views of other eminent students of the subject (such as Herrenheiser, Hirschberg, Trousseau and Landesberg) coincide nearly with the above, so that a conservative estimate places the number of cases of preventable blindness at from 40 to 45 per cent.

I invite your attention to a brief consideration of a few of the infectious diseases of the eye that are responsible for a large proportion of this

* Read in a Symposium on "The Prevention of Blindness and the Conservation of Vision," at a meeting of the South Side Branch of the Chicago Medical Society, Feb. 8, 1912.

45 per cent. of cases of preventable blindness, about the nature of which the laity as well as the profession should be more fully informed.

Chief among these is the disease technically known as ophthalmia neonatorum, or gonorrheal inflammation of the eyes of the new-born babe.

This serious affection occupies a conspicuous place among the preventable diseases included in the third class before mentioned, and occurs as a result of the infection of the eyes at the time of or soon after birth, and in rare instances even before birth.

The disease usually begins one or two days after delivery of the child, with a redness of the eyes and swelling of the eyelids. Within another day or two a profuse purulent discharge comes from the inflamed lining of the eyelids, and if the trouble is not checked by prompt treatment, the cornea is destroyed and with the subsidence of the inflammation the front of the eyeball is covered with a dense white scar that causes partial or total blindness.

Carefully prepared statistics show that this one disease, next to atrophy of the optic nerve, is the most frequent cause of blindness, and it is variously estimated that from 15 to 25 per cent. of all blind persons are blind from this cause.

Certainly in the special schools which form the general clearing house for the young blind, where usually the cause can be fairly accurately determined, this plays an extremely important rôle, and the percentage is very high. For example: In the school for blind in Sheffield, England, Snell found this the cause of blindness in 136 out of 321 cases or 42 per cent.

Reports from ten schools for the blind in this country, including such institutions as the Perkins Institute of Boston, New York State School, Mission School, Ohio State School, etc., show that of the new admissions for 1907, 27.5 per cent. were blind from this cause. In the Pennsylvania School for the Blind, of all the admissions for the last eight years, 33.36 per cent. were blind from ophthalmia neonatorum. More than 25 per cent. of the pupils at the Institution for the Blind at Jacksonville, this state, are there because of this disease. Reich reports that in Russia one of every 500 of population is blind, and that ophthalmia neonatorum is the cause of 15 per cent. of all blindness. Haussman, in a remarkable monograph, estimated that of those seeking admission to blind asylums of Germany, Austria, Denmark and Holland during a number of years, from 15 to 60 per cent. had been blinded by this disease. Cohn reported in 1876 that in twenty-two German blind asylums 30 per cent. of the cases were the result of ophthalmia neonatorum, while in 1896, twenty years later, the proportion had fallen to 10 per cent., probably the result of preventive measures that will be mentioned later.

More statistics might be cited, but statistics are dry and tedious, and enough have been given to show the serious extent of this really dreadful malady. Dreadful as it is, it is easily preventable, as has been conclusively demonstrated in many lying-in hospitals where suitable preventive measures are practiced.

Prior to the days of antiseptic midwifery, and up to 1880, this disease constituted a veritable scourge among the new-born children in the great

lying-in hospitals of the world, from 2 to 10 per cent. of the children born in these places contracting the disease.

In the great Leipzig maternity, prior to 1880, 10 per cent. of the children born there developed ophthalmia neonatorum, but after the inauguration by Professor Credé of the preventive treatment of dropping into the eyes of the new-born child at birth a drop of silver solution, this percentage at once fell to 0.5 per cent., and this, combined with other antiseptic measures, has reduced the number of cases to almost nothing. Other lying-in hospitals make an equally favorable showing as to the prevalence of this disease since the introduction of antiseptic measures. For example, in a number of British hospitals where the births from 1896 to 1906 were 35,815, there were only seventy-nine cases of this trouble, a percentage of only 0.22.

In good lying-in hospitals where every known precaution is taken, a case of ophthalmia neonatorum is rarely seen. The modern lying-in hospital is therefore a great factor in stamping out this malady which has such a baneful influence on society, and which costs the state so many members and so great an expenditure of time and money. To give an idea of the economic principles involved, it is estimated by the London *Lancet* that in England it costs to educate a blind child up to the age of 18 years \$2,500, while for one with normal sight the cost is only \$150.

Prevention of this disease consists in careful preparation of the mother before and during confinement, careful cleansing of the child after its birth, and, in suspected cases at least, the use of selected remedies in the eyes immediately.

But the great danger and difficulty lies in the fact that inexperienced, incompetent and dirty midwives often officiate at these functions, and they are more difficult to control.

Laws should be made and enforced requiring better training of midwives and their registration. They should be compelled to report every birth and every case of inflammation of the eyes as soon as it develops, and also be trained to use prophylactic measures against this disease. Laws directed against this evil are on the statute books of several states, including this one, but they are not properly enforced and they need to be amplified.

Under the direction of a committee on ophthalmia neonatorum of the American Medical Association, there is a strong and growing movement to fight this evil by concerted action of the various medical organizations and state boards of health. This committee in its report to the American Medical Association urged the necessity of more careful statistics as to the prevalence of the disease and a wider knowledge of its dangers. It advocates careful registration of births and midwives, education of midwives, mothers and the medical profession on the subject. It also advocates the preparation and distribution by health boards of the remedy chosen as a preventive, with explicit directions for its use; and that state boards of health should be empowered to enforce laws enacted for the prevention of this disease, and even to make such rules, regulations and ordinances as they deem expedient to accomplish this object.

The views of this committee have been endorsed by a number of the medical organizations of the country as well as by the American Public Health Association and the National Congress of Mothers.

A campaign of education on this subject is therefore important. The medical profession, as a rule, is fully alive to the dangers of the disease, but the public and particularly the midwives and the mothers are not. Such a campaign has been started in certain states in this country that have commissions for the blind, notably Massachusetts and New York, and they are doing excellent work. For example, the New York Association for the Blind, which has received substantial support from the Russell Sage Foundation, is accomplishing results by means of its publications, public speaking and photograph exhibits, and has sought and obtained suitable legislation by the state. One of their publications entitled "Directions to Mothers, Midwives and Nurses for the Prevention of New-Born Babies' Sore Eyes" is a small tract, printed in five languages, English, Italian, German, Polish, and Yiddish and distributed by thousands where it is likely to do great good.

Trachoma.—Another dangerous infection of the eye is trachoma, or granulated eyelids. This disease, although not so contagious or so serious as the one just considered, is dangerous partly because it is so insidious. A person often contracts it and for a long time may not know that he has it, unless it appears, as is not usual, with an acute outbreak. More frequently it assumes a more chronic form from the beginning, and the individual is only aware that his eyelids are irritable, scratchy and burning with very little or no discharge. These symptoms prompt him to consult a physician, who, if he understands the subject, recognizes the peculiar roughness of the lining membrane of the eyelids that characterizes the disease, and begins prompt treatment for trachoma.

The roughness of the conjunctiva (or lining membrane of the lids) is due to the presence in that part of small granules or trachoma follicles, which continue to develop and even invade the membrane covering the eyeball. The cornea itself becomes roughened and ulcers may develop; this ulceration of the cornea is the dangerous feature of the disease, for the eye may be lost in consequence. If the ulcer heals, the resulting scar may seriously impair sight.

Through the whole course of the affection, the patient experiences great discomfort, and in the acute outbreaks is utterly incapacitated.

This disease is conveyed by contagion. To contract trachoma one must get into his eye some of the secretion or discharge from a trachomatous eye, and this is usually brought about through the medium of towels, washcloths, handkerchiefs or wash basins that are used in common by a large number of people. Although contagious, it is not virulently so, and by the exercise of proper precautions and average decent cleanliness, one need never contract the disease.

The crusade against the usually filthy roller towel in public or semi-public places is commendable, as it is undoubtedly partly responsible for the dissemination of this as well as of other eye diseases.

Infectious Ulcer of the Cornea.—This usually results from a slight wound of the cornea becoming infected or poisoned by some virulent form of germ or bacterium. The wound of the cornea may be no greater than that caused by a slight scratch or abrasion or even a cinder lodging on it. Through this small opening the infectious organisms that are frequently on the individual's own eyelids find entrance, and the mischief is soon started. Unless prompt and energetic treatment is instituted, rapid and progressive ulceration of the cornea may develop that may cause complete destruction of the eyeball; or if this is happily averted, the resulting scarring of the cornea will seriously impair the sight.

Numerous instances of blindness, especially among the laboring classes who are more apt to neglect slight injuries of the eye, are the result of this form of infectious inflammation. In most cases it might easily be prevented if properly treated in time. The prompt removal of small foreign particles, and the careful antiseptic cleansing of the eye would, in most cases, be sufficient to prevent the trouble.

Sympathetic Ophthalmia from Infective Wounds of the Eye.—This is a form of inflammation that attacks a sound eye some time after the other has been injured by a penetrating wound. The wounded eye is usually infected at the time of injury, and as a result of this becomes seriously inflamed and usually blind. If such an eye does not heal promptly and kindly, and if it is sightless and painful, it had better be removed to prevent so-called sympathetic inflammation from developing in the other eye.

This causes a considerable number of cases of blindness, and is more pathetic as the blindness is usually total. It is more frequently observed among the artisan class, because of the greater risks they encounter from flying particles of steel or broken tools.

It would be well if employees in all factories could be given suitable information as to the dangers of all wounds of the eye, however slight; and better if proper precautions could be enforced to prevent such injuries and the serious results that so frequently follow from a neglect of treatment of them.

Possibly in the new workmen's insurance laws that are sure to come such precautions will be enforced rigorously, as they deserve to be.

It is the duty of the medical profession to disseminate information as to these diseases of the eye, their dangers and the means of prevention. The medical profession has recognized this duty and has not neglected it, but has been continually calling the attention of the public to its importance.

It is the duty of society to help spread this knowledge among the less fortunate and to enact and enforce laws directed to the prevention of these diseases that cause so much unnecessary suffering and such great economic loss.

Illinois should have a commission for the blind, to which should be entrusted the matter of collecting statistics as to the prevalence and causes of blindness in this state, of initiating or supporting movements for prevention of blindness and of cooperating with the proper health authorities in the enactment and enforcement of suitable laws directed to this end.

CONSERVATION OF SCHOOL CHILDREN'S EYES

FRANK ALLPORT, M.D.

CHICAGO

About 40 per cent. of our school children have eye diseases or defects that more or less incapacitate them from acquiring a proper education. We must largely look to education, and mental and social training for the diminution of crime and criminals; therefore every child should be educated as well as possible, and if ocular or other diseases or defects are a hindrance to progressive school life, such pathologic conditions should be detected and, if possible, relieved. Even removing crime and criminals from consideration, every person is better, happier and more prosperous if educated; therefore, all obstructions to education should, if possible, be removed.

Millions of dollars are annually spent on the education of children who are unable to progress, and who remain about stationary in school year after year. The lack of advancement is largely due to various physical defects and diseases, in which the eye plays an important part. Millions of dollars may be therefore saved and otherwise expended, if ocular diseases and defects are detected and relieved.

It costs \$15,000,000 annually to support the 65,000 blind people of the United States. Many of these people would have escaped blindness if their diseases had been detected during school life, thus preventing extensive misery and the useless expenditure of much public money.

The necessity for the detection of, and relief from, ocular defects and diseases thus being assumed, the best method for the accomplishment of this end should be determined. The mere observation of children by teachers or parents is insufficient and inaccurate. Nothing but a systematic examination of each child is adequate. Such examinations should be annual, should include every child and should take place in the early fall to enable teachers to observe the effect of treatment, and to follow up children and parents if nothing is being done where diseases and defects have been recognized.

Such examinations may be made by doctors, school nurses, or teachers. Doctors are expensive, uncertain as to time and work, and usually produce professional jealousy and discord, which ultimately causes an abandonment of the plan. School nurses are expensive. Teachers can do this work perfectly well if they use the system which I have proposed: in fact, they are especially qualified for the work, as they are intimately acquainted with the children and are familiar with their physical conditions. No medical education is necessary to make the tests, the questions are primitive and simple and will disclose the existence of 95 per cent. of serious eye, ear, nose and throat diseases and defects. Teachers are not expected to *diagnose* diseases and defects, they should simply ascertain the existence of some abnormal condition. The doctor consulted will perform all medical functions. Teachers should not feel that these duties

* Read in a Symposium on "The Prevention of Blindness and the Conservation of Vision," at a meeting of the South Side Branch of the Chicago Medical Society, Feb. 8, 1912.

are a tax on their time and strength. The little apparently extra work will ultimately pay them a hundred fold by producing better pupils in every way. They should therefore assume the work cheerfully instead of grumblingly, as it is for their benefit as well as the child's.

The test consists of nine simple questions, or observations. If a defect or disease is disclosed, the parent is warned by a printed card and urged to consult a doctor of his own choosing. Simple records are kept. A child can easily be examined in five minutes, with systematized proceedings. School rooms usually contain about forty pupils. An entire room can therefore be examined in four hours. I recommend that a regular and definite day in each early fall be dedicated to this work, during which time each teacher shall examine her own pupils. By thus subdividing the work every school child in a city of any size can be examined in one day.

If this plan is regarded as unfeasible on account of interference with the regular school work, from eight to ten children can be detained after school each day, until all are examined. By this plan all children could be examined in a week. Teachers and school nurses can greatly assist the beneficial achievements of the plan by displaying continued interest in defective and diseased children, remembering that most public school children possess parents both ignorant and careless, who greatly need the guidance of intelligent and conscientious people. The expense of this plan is practically nothing, if performed by teachers; it consists merely in the purchase of the testing charts and the printing of the "warning cards" and the record blanks. Where can so much good be accomplished for so little money?

It is the opinion of most educators and school hygienists that boards of health should only have supervision of those pathologic conditions of school children which menace the public health and that the physical defects of pupils should fall under the control of the board of education.

ILLUMINATION AND VISION *

JAMES R. CRAVATH
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Illumination makes vision possible. It is therefore important to study the conditions favorable and unfavorable to easy and comfortable vision to the end that we may avoid illuminating arrangements detrimental to eyesight.

Good daylight illumination like good fresh air has been provided so freely by Nature that for many years little thought was given either to the kind of air we breathe or the kind of illumination we have to work under. Modern conditions of living, however, have forced us to consider the fresh air and ventilation problem. Likewise modern conditions force us to attend to the illumination problem.

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Among the principal things causing the existence of an illumination problem in connection with the conservation of vision may be mentioned the increasing amount of close work required of the eyes in factories and offices, the tendency to arrange offices and factories so that there is an insufficient supply of daylight, and last but not least, the increasing amount of work which is done under artificial light.

Of the bad natural and artificial arrangements, those are most dangerous which are not bad enough to be so evidently uncomfortable and injurious that they are changed or avoided.

A large number of persons work every day under conditions of lighting which are not bad enough to make a change imperative, but which nevertheless cause considerable unconscious eye strain.

Without attempting to go into the reason why certain lighting arrangements are bad, I will simply mention some of the principal things to be avoided in natural and artificial lighting.

Insufficient light would seem to be a defect apparent to any one, but nevertheless exists in some crowded offices and factories. At the present time there is considerable uncertainty as to the minimum illumination required for any given kind of work as expressed in foot candles on the surface illuminated. Recent experiments by the writer indicate differences as great as 1 to 5 between different individuals for doing the same work. In general the amount of light required increases with age.

A flickering light, whether natural or artificial, should be avoided, as its strain on the eyes is a matter of common observation. Daylight is usually steady unless one is working near a window across which steam or smoke is blown at intervals. The flickering open gas jet is probably the worst offender in this respect among artificial illuminants. A swinging electric lamp on a drop cord is also bad; so is a flickering arc.

Many people work under electric light with polished tin reflectors or reflectors lined with smooth white opal glass, which cause irregular streaks and lines on the paper or other surface illuminated. This is bad because the eye is constantly attempting to adjust itself to the differences in illumination.

The most prevalent bad conditions in connection with artificial light are glare from lamps shining in the eyes and the glare of reflection from the lamps as received from the polished or calendered papers which are now commonly in use.

We instinctively shield our eyes from the sun. We are obliged to do this in self-defense. When we come to artificial illuminants of various kinds, however, these small sources of light are not sufficient to force us to shield our eyes from them. Much eye strain and annoyance are caused by bright unshaded artificial light shining directly in the eyes. The amount of eye strain caused by artificial light shining in the eyes is dependent on the candle power of the lamps, the distance from the eye, the condition of the individual and the contrast of the lamps with the surroundings; that is, a certain lamp amid dark surroundings is much more annoying than the same lamp amid very light surroundings. Even daylight can be annoying and probably injurious if a person is facing a

small window in a rather dark room so that the window is in strong contrast to its surroundings. The man who works with a bare electric lamp or gas jet a few inches in front of his nose without a shade either over his eyes or over the lamp may have eyes strong enough to stand this treatment indefinitely without harm, but he is taking large chances, where it is really unnecessary to take any. Incidentally, he is causing himself an altogether unnecessary amount of annoyance, as it requires some effort to see clearly under such circumstances, and in fact under some conditions there is an actual reduction of one's ability to see clearly with a lamp in the field of vision. That, however, is another matter too lengthy to discuss here.

Church and auditorium architects and building committees are not properly looking after the comfort and conservation of vision of the public when they arrange lamps so that a large amount of undiffused, unshaded light shines directly in the eyes of those in the audience.

Another man who needs educating is the architect who insists for so-called artistic reasons in lighting living-rooms and bedrooms entirely by means of lamps on low brackets. If such bracket lamps are properly shaded, there is not enough general illumination in the room, while if they are unshaded the glare from the lamp renders the illumination uncomfortable from every standpoint.

Notwithstanding all that I and others have said about the bad effects of too much glare from exposed artificial light sources shining directly in the eyes, my personal opinion is that at the present time as far as the public generally is concerned, there is far greater menace to vision in the glare from papers or polished surfaces over which we work by artificial light. These papers or polished surfaces reflect to the eye a blurred image of the source of light whenever the angle from the light to the paper and the paper to the eye is the same. Everyone who reads or does office work, or works over polished metal in a factory by artificial light is subject to this annoyance. The reason this is so much more troublesome with artificial light than with daylight is that the sources of artificial light are small, while the source of daylight to a person indoors is a large area of sky. The smaller the source from which the light comes, the more pronounced will be the annoying glare reflected from the paper. It is this which constitutes one of the fundamental differences between artificial light and daylight. It is doubtless mainly responsible for the prevalent idea that artificial light is necessarily not as good to work under as daylight. It is also probably responsible for an erroneous idea that certain kinds of artificial light are of themselves more trying on the eyes than certain other kinds. With a bare incandescent lamp, for example, the source of light is very small as compared with the large flame of a kerosene lamp, hence a very prevalent idea that there is nothing like an old kerosene lamp for reading purposes. The light from the electric lamp can be so diffused as to be as good or better than the kerosene lamp. It is entirely a question of how the lamp is used rather than the kind.

One often experiences glare from work so pronounced that reading is impossible. There is no particular danger in this, because when the

glare is prohibitive of reading one naturally shifts either his position or that of the paper. Where the real eye strain comes in to the majority of workers under artificial light is in their attempt to read or do other work when receiving a certain amount of incipient glare from the paper, but not enough to make them realize that they should improve the conditions. There is an immense difference in the eye strain involved in reading on smooth paper under a desk lamp in different positions. Yet reading may be quite possible in all of these positions. Furthermore, one frequently sees desk lamps so arranged close to the work that the worker is constantly receiving glare from some portion of the desk or paper, even though the particular part on which he is reading may be inoffensive. This is a cause of eye strain. The remedy for these conditions lies in a more careful placing of any local individual desk lamps which must be used, but even more important than this is providing a good system of general illumination whereby the light may be received on the work from a number of different directions, and from sources of light as large in area as possible.

PREVENTION OF BLINDNESS *

WILLIS O. NANCE, M.D.
CHICAGO

The subject of the prevention of blindness is one that should be of the greatest interest to the public generally. It has been clearly shown that there is an economic as well as a social phase to be considered. The question of the most intense moment is, What practical means can best be employed to prevent loss of sight? Unquestionably, more can be accomplished by education than any other means. Next to this, intelligent legislation can avail much. First, teach the public that the cause of at least 30 per cent. of all blindness is due to inflammation of the eyes of the new-born child and urge them to be on the lookout for the disease in their own and their neighbors' families. Teach them that this disease seldom occurs when the family doctor or other attendant does his full duty. Teach them that, as a rule, redness of the eyes when accompanied by a sticky discharge is contagious and to avoid coming in close contact with another person when suffering in that way. Teach them of the dangers of injuries of the eye, not only to the eye involved, but to the other eye by "sympathetic" disease transmission. Teach them the dangers of serious infection incident to the removal of cinders from the eye by means of toothpicks, matches and the like. Caution them against the use of proprietary "eye-drops" and simple "home remedies" in serious inflammations of the eye. Teach the children to amuse themselves in other ways than by the use of air-rifles, pocket knives, firecrackers and fireworks. Urge on factory owners and railroad managers the value of safety appliances.

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Intelligent legislation can assist materially in preventing blindness. The passage of the ordinance abolishing the roller towel in public lavatories in Chicago last summer, which the speaker had the honor of introducing into the city council, and the newspaper publicity incident to its adoption by that body, I believe, has aided materially in preventing the spread of many serious contagious eye diseases by forcibly bringing before the public the dangers of the "common" towel. The ordinance introduced in the city council last Monday night providing for the prompt report to the health department of all cases of sore eyes in new-born babies will, if adopted, result in the prevention of many cases of blindness.

Public meetings held under the auspices of the public press, as this one to-night, will do much toward aiding the propaganda. Let members of the medical profession, teachers, sociologists, social workers, women's clubs and civic organizations generally take on themselves the duty of spreading such knowledge as will better inform the public on the subject and much blindness will thereby be prevented.

PREVENTION OF INJURIES TO THE EYES IN STEEL MILLS *

ROBERT J. YOUNG

Secretary, Committee on Safety, Illinois Steel Company.

For a number of years the Illinois Steel Company has been carrying on an active campaign for accident prevention. It has not only devised many different kinds of safeguards, but has evolved a number of ways of keeping the workmen interested in this work and in looking out for their own and others' safety.

In steel plants the dangers of injuries to the eyes arise from several different sources, viz., chipping castings and other metals; handling molten metal; grinding metal on emery wheels; pouring babbitt; the use of the electric arc at blast furnaces; the use of the electric arc welder.

Chipping Castings and Other Metals.—The men who are employed as chippers in the casting yards are urged to wear goggles and a great deal of effort has been made to get goggles that would be satisfactory to the men and which would not inconvenience them. The glass goggle (Figs. 1, a and 1, b) appears to be giving the best satisfaction.

When men are doing heavy chipping, such as "ragging" rolls, they are provided with wire face masks (Fig. 2).

The chipping yard foreman makes sure every morning that each man is provided with a perfect pair of goggles, and he urges the men to wear them. In addition to this, signs in the English and foreign languages are posted in the yards, warning the men of the danger of chipping without the eye protectors (Fig. 3).

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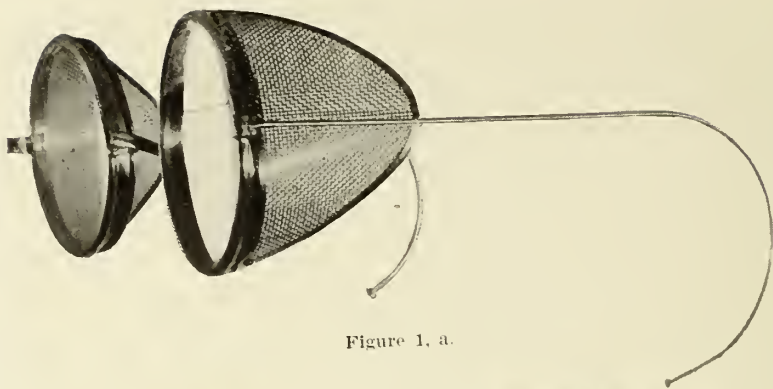


Figure 1, a.

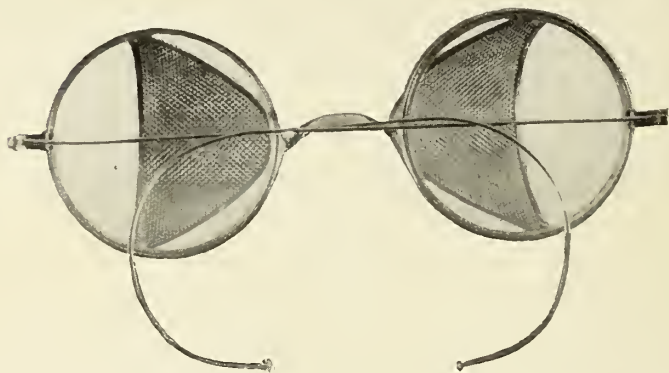


Figure 1, b.



Figure 2.

DANGER

YOU ARE WARNED AGAINST WORKING WITHOUT EYE PROTECTORS OR WITH BATTERED TOOLS. GET PROPER TOOLS AND EYE SHIELDS FROM FOREMAN.

NEBEZPECNO

TEBE JE ZAKAZÁNO PRACOVAT BEZ SKEL NA OČI ALEBO SE ŠPATNÝMA NÁSTROJMI. DOŠTAŇTE DOBRÉ NÁSTROJE A SKEL NA OČI OD FORMANA.

VESZÉLY

ÓVAKÖDJ SZEMVÉDŐ NÉLKÜL VAGY ELROJTOTT SZERSZÁMMAL DOLGOZNI. KERJEN FOREMANJÁTÓL RENDES SZERSZÁMOT ÉS SZEMVÉDŐT.

OPAZNO

KADA RADIŠ PAZI DA JE TVOJE ORUŽJE SASWIM CIJELO I NOSI NA OČALE. SVE ČEŠ DOBITI OD FORMANA.

NIEBEZPECZENSTWO

NIE PRACOWAŁ BEZ SZKIEŁ, JAKOTEŻ ROZBITYMI NARZĘDZIAMI. DOBRZE NARZĘDZIA I ZSKŁA NA OCZY MOŻNA DOSTAĆ OD FORMANA.

W. A. FIELD, GENERAL SUPERINTENDENT.

Figure 3.



Figure 4.

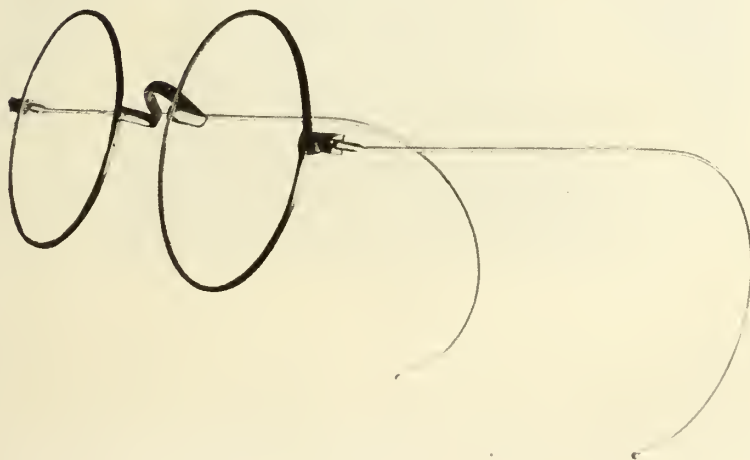


Figure 5.

Pouring Molten Metal.—The goggles worn by the men while pouring molten metal are imported from Germany (Fig. 4). There are also signs, in the English and foreign languages, at the places where molten metal is poured, warning the men that if they do not wear these goggles while



Figure 6.



Figure 7.

pouring metal they will be sent home. Here the wearing of goggles is compulsory.

Grinding Metal on Emery Wheels.—Each man is provided with a pair of large plain glass spectacles (Fig. 5) which he wears when he has occasion to do any grinding. He keeps the spectacles locked up when

not using them. The men are not allowed to exchange glasses because of the danger of transferring diseases of the eye.

Pouring Babbitt.—In pouring babbitt each man is required to wear goggles. This pair of goggles (Fig. 6) shows what would have been the fate of one workman had he not been so protected. He was pouring babbitt when it exploded and had he not been wearing goggles he would have lost the sight of both eyes.



Figure 8.

The Electric Arc at Blast Furnaces.—The electric arc is used in cutting away iron which has “frozen” in the tuyeres and in the tapping holes of a blast furnace. In addition to the rules explaining to the men that looking at this intense light, even for a short time, will cause great pain in the eyes and possible injury, face shields (Fig. 7) in which are placed three layers of colored glass (one blue between two red) are provided for their use and protection.

Electric Arc Welding.—A different kind of a shield is provided for the arc welder (Fig. 8). The shield, which is fitted with colored glass, is suspended in front of the workman so that he watches the work through the colored glass and is also protected from the heat.

All goggles and shields are provided by the company free of charge.

THE COST OF PREVENTABLE BLINDNESS TO THE NATION

HYMAN COHEN, M.D.

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CHICAGO

Economic considerations are pivotal in the explanation of any and every phase of the health movement. Their leverage partakes of the nature of cosmic law and is socially imperative. If we seek for a basic explanation for the rise, spread and development of the health movement we must turn to the economic laws governing society. With respect to the health movement three steps are discernible:

1. Primitive man only had his muscles to aid him in the struggle for existence. Inability to produce enough to sustain the race resulted in chronic conditions of famine. Feticide, infanticide, the killing of the old and weaker members of society, were recognized and justified social practices. Food was scarce, some had to die before their time and it mattered little how they died. Under such circumstances health considerations were impossible.

2. In the next stage, when man's brain came to the assistance of his brawn, when implements and tools were invented and applied, a fuller cooperation with Nature obtained. Production balanced consumption; death, for lack of food, is removed as an inexorable law; personal hygiene, in some form, comes into being.

3. With the introduction of modern machinery, division of labor, etc., production outstrips consumption, man receives a money value, the individual becomes a national asset and his health a vital national problem. The conservation of the public health now becomes one of the foremost governmental functions. Thus understood, the health movement is not a mere expression of sentimental altruism, but a sociologic phenomenon of first importance. This offers a solid foundation for our efforts in furthering the movement.

The work in behalf of the preservation of sight and the prevention of blindness is only one of the manifestations of the many phases and activities of the health movement. In our gradual examination of our aggregate human body we have come to see that there should be none who cannot see. We are beginning to appreciate the greatest of all sayings in the great book: "And God said 'Let there be light.'" Also we are beginning to see the dollar — that is lost — through our blindness.

The most pertinent query in connection with any preventable disease is: "If preventable why not prevented?" The best and cheapest way to prevent is to remove the cause or causes. Ophthalmia neonatorum, gonorrheal infection, is the most frequent, the most deplorable, because easiest preventable, the most unnecessary and potent cause of blindness. Twenty-five years ago it was estimated that it contributed over 30 per cent. to the total number of blind. Twenty-five per cent. of those under 20 years of

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age now in our public institutions for the blind are victims of ophthalmia neonatorum. It still contributes 10 per cent. to our blind population. Of the 65,000 blind in the United States no less than 7,000 have been blinded by gonorrhea.

Small-pox at one time was a wide-spread cause of blindness. In Russia, Solowin found 28 per cent. of blindness of 552 cases investigated in eighteen institutions due to small-pox. Among us to-day it is happily rare; unless ignorant and antisocial court rulings as to vaccination and misguided soft-brained ideas of "personal liberty" succeed in bringing the dread scourge — small-pox — in our midst, to put our eyes out.

Avoidable accidents are responsible for 14 per cent. of blindness. Old age with the unfavorable conditions frequently accompanying it, such as poverty, sickness and previously practiced general functional abuse of the body, contributes about 15 per cent. of blindness. It is stated on good authority that 4 per cent. of blindness is due to progressive nearsightedness brought on by ill-fitted glasses. Other causes are the drinking or exposure to wood alcohol, exposure to lead and arsenic and the excessive use of tobacco.

The cost of blindness to the state, and in this instance "cost" is synonymous with "loss," is positive and negative. On the positive side the cost is distributed over the following items: (1) cost of treatment at the onset of the disease; (2) cost of educating the blind; (3) cost of maintenance. The negative items of cost, or rather loss, are: (1) unemployment; (2) reduced earning capacity.

The cost of treatment is difficult to calculate, as can be readily seen. It is safe to figure an average of \$25 per case, which would amount to \$1,625,000 for the 65,000 cases in existence. This is the smallest item. It costs the state about \$22 per year to educate a normal child. The per capita cost of educating a blind child is \$110 per year. Add to it the fact that the blind child stays in school about fifteen years to the average ten years of the normal child, and the cost of educating the blind is nearly tenfold that of the normal child.

The cost of maintenance, to the state, of the dependent blind is about \$10,000 per capita through life. Multiplied by the number of blind we get the huge sum of \$650,000,000. This divided by the average duration of life in the blind, say thirty-five years, and we get approximately \$18,000,000 as the yearly expenditure of the country in maintaining the blind. It takes \$1,800,000, or one-tenth of the total, to maintain the sightless wrecks of ophthalmia neonatorum alone. Then there is the negative cost of unemployment and reduced earning capacity. The average wage of those of the blind men who are employed is \$7 per week; that of the women about \$3 per week. There are no definite data as to the number of blind employed, probably not more than one-third of the total. If we bear in mind the surplus value created by the normal individual and compare with it the loss through unemployment and reduced earning capacity, it would probably amount to as much as the actual loss. Blindness, then, places a huge and unnecessary tax on the country that the blind who can see must pay for the blind who cannot see, for the

cost must be borne by the seeing, the blind themselves cannot pay for it except in eternal darkness and wasted, pitiful existences. The loss to the blind is one that cannot be estimated without a mental groan.

Now what will it cost to prevent unnecessary blindness, and first of all what will it cost to prevent the most preventable and most unnecessary form of blindness, that due to ophthalmia neonatorum?

A 1 per cent. solution of silver nitrate instilled in both eyes is a sure preventive. Silver nitrate sells at \$6 a pound. Four pounds of silver nitrate at a cost of \$24 would suffice to protect the eyes of the 57,000 children born annually in Chicago. Add to the cost of the drug the cost of the containers and the expense of distribution and it will amount to something like \$500. For \$500 we can protect the eyes of over 50,000 children; we can save human eyes — baby eyes — at two for a cent. At the same rate it would require \$25,000 a year to protect the eyes of every one of the 2,000,000 children born in this country. Compare this insignificant sum with the cost of blindness. Why don't we do it? Because, as a community, we are still ignorant and careless about the health of the individual; our humanity is only moved at the sight of misery which we have allowed to become established. It is not a wise planning humanity that prevents, it is a commiserative humanity. Because, also, we are poor business men and do not understand the economics of health and disease in their large aspects. Because of such a state of public ignorance and indifference there is no such thing as a complete registration of births in this country. For the same reason ignorant persons are allowed to officiate at the birth of the children of the nation without attempting to protect their eyes. Again, in very few instances is ophthalmia neonatorum reported to the health authorities at the stage when proper and active treatment can save the child's eyes.

It is not a mere matter of supplying the silver solution to those stationed at the portals of life. This should be done by all boards of health and is being done by many. The real problem and the real task lies in educating the midwives and physicians as to the importance, urgency, harmlessness and ease of the procedure. Above all the public at large should be educated to demand "the drops." Without an intelligent coercive public opinion not much will be accomplished.

The other causes of blindness are gradually being eliminated. General hygienic conditions are improving. Blindness through accident is being reduced through safety devices. Here economic principles — hospital bills, damage suits, invalidism, are potent enough to bring about practical humanitarianism.

The baby, the one that needs protection most, is least protected. Ignorance, guilt, criminal carelessness rob it of its sight. Intelligence, public spirit, humanity and practical economic considerations must come to the aid of the infant.

The question is: Shall we pay an enormous sum and allow destruction and blindness to exist in our midst, or shall we pay an insignificant sum for sight preservation? Shall we allow ignorance and criminal carelessness to rob us both of our sight and money, or shall we arouse public

spirit to see to it that the great gift of light is assured every child born? Shall we go on blundering blindly in our duty, or banish blindness — the darkest curse — from the land? These questions the community must answer not only for reasons of economy but also from moral and humanitarian considerations.

MIDWIVES AND BLINDNESS *

CAROLINE HEDGER, M.D.

CHICAGO

What we know, what we do not know, how can we find out, and what can be done about two very bad situations?

1. There is no adequate birth registration, and if the babies' eyes are saved, it must be the doctor or the midwife who saves them. And yet blindness is a social problem, and you support the blind; therefore it is vitally your business to know whether eyes are lost, why they are lost, if it can be prevented, and that your doctors and midwives are adequate to prevent such loss.

TABLE 1.—ILLINOIS
(Compiled by Dr. Wilder.)

Year	Number Blind.	Number per 100,000 population
1870	1.042	41
1880	2.615	85
1890	2.835	74.1
1900	3.767	78.1

2. Blindness in Illinois (Table 1) was, up to 1900, fluctuating but not decreasing. Table 2 shows that while Illinois occupies the enviable position of lowest number of colored blind per 100,000 of population, her position in white blind is not so good, being just at the mean for the whole United States, 78.1.

3. One-third of the blind in Jacksonville are there because of ophthalmia, by the report of the superintendent of the institution. Ophthalmia is a preventable disease, and must be prevented in one of two ways: (a) by keeping gonorrhea out of the family; (b) by treating the eyes of babies as soon as born with some substance that will not harm the eye but will destroy the germ of gonorrhea.

4. The attorney for the State Board of Health informs me that midwives are forbidden to use any drug. Therefore the midwife must break the law or leave the babies' eyes to chance. As a matter of fact, in a recent investigation by Mrs. Horrigan and her nurses and made possible through the kindness of Health Commissioner Young, out of 363 midwives, thirty-seven use silver nitrate, three use argyrol, another silver salt, and 175 use boracic acid.

5. The same 363 midwives admit in their practice but 139 cases of sore eyes. This probably must be laid to lack of observation or to extreme

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modesty in stating the case. Where do those in Jacksonville come from? From the infection in the family in the first place, and from the inadequate or delayed treatment by midwives or doctors in the second.

6. The law in Illinois demands that the midwife shall report all cases of sore eyes to the health department or to a doctor. Does she? We don't know. The 363 admitted having reported thirteen cases to the health department.

7. The health department has just made ophthalmia, the sore eyes of the new-born, a reportable disease; this should help and I believe will help.

TABLE 2.—BLIND PER 100,000 POPULATION BY STATES

	White.	Colored.		White.	Colored.
Wyoming	21.5	114	<i>Massachusetts</i>	79.5	87
Washington	40	96	<i>Michigan</i>	80	156
Montana	40	158	Mississippi	80	74
<i>Minnesota</i>	50.6	146	California	80.5	92
North Dakota.....	52.6	524	<i>Connecticut</i>	82	62
<i>New Jersey</i>	53	95	<i>South Carolina</i>	82.2	78
Colorado	54.7	92	<i>Maryland</i>	82.7	102
Arizona	56.1	99	Virginia	85.7	86
Nebraska	60	143	<i>Iowa</i>	90.2	121
Oregon	60.2	242	Georgia	91.8	84
Oklahoma	62.8	107	North Carolina....	94.4	84
Indian Terr.....	66	95	Kansas	95.2	103
<i>Rhode Island</i>	66	105	West Virginia....	96.5	80
<i>Idaho</i>	68.6	590	Alabama	97	90
<i>Texas</i>	68.7	66	New Hampshire....	101.3	0
South Dakota....	69.7	388	<i>Maine</i>	104.4	0
<i>Pennsylvania</i>	70	66	Missouri	107	..
<i>Wisconsin</i>	72	170	<i>Ohio</i>	107.4	148
<i>Dist. Columbia</i>	72.5	90	<i>Indiana</i>	118	91
<i>Utah</i>	74	165	<i>Tennessee</i>	118	104
Florida	74.4	77	Arkansas	121	86
New York.....	75.5	78	Kentucky	129	133
Delaware	76	61	Nevada	132	533
<i>Louisiana</i>	77.5	84	<i>Vermont</i>	132.7	229
<i>Illinois</i>	78.1	57	New Mexico	230.4	291

States in italics have laws requiring midwives to report ophthalmia.

What We Do Not Know.—We do not know how many babies are born in Chicago or where, because we are tied to a perfectly good law that has never been made workable in Cook County because the county has never voted the funds called for in the law to pay the doctor for a birth certificate. [*Appropriation now made.*]

Should the doctor be paid 25 cents for a birth certificate? He should. It often necessitates an extra call and is very little advantage to the doctor. The birth certificate has a value to the parent and there the responsibility should rest and that without pay.

Mr. Schweitzer, our present county clerk, sees the need of birth registration and is making efforts to increase it. According to a bulletin of the State Board of Health Peoria and Chicago have the right to have birth registration transferred to the health department. If, however, the payment for the certificates devolves also on our financially burdened department of health, little would be gained.

If this change could be made and the county pay the fees it would save delay and transfer of names.

We do not know how many midwives we have or where they practice or what their qualifications are. Midwives are licensed by the State Board of Health, but the law provides for no inspection, so once licensed they are lost. They may marry, move, die or let some one else carry on their work and no one is the wiser. Their examination is a written one. I have a sworn statement as to the methods in one such examination a few years ago. A Slavic-speaking physician was writing for a license

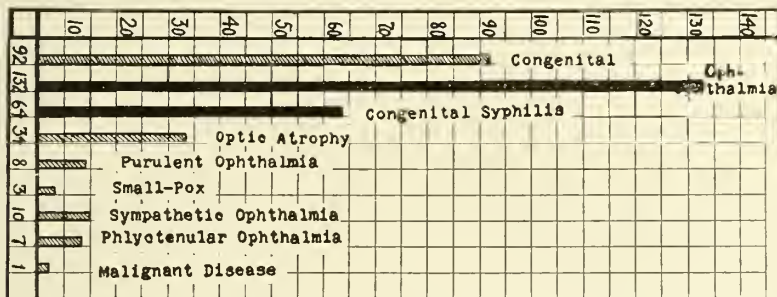


Chart showing causes of blindness in 363 school children examined in London (Harmon, 1907). Solid black column indicates blindness due to preventable venereal disease.

in the same room with the midwives. A Polish woman, acting as interpreter, walked up and down discussing with the midwives how the questions should be answered. The physician protested to the examiner but the only reply thought necessary was: "If it wasn't for the midwives what would all you doctors do?"

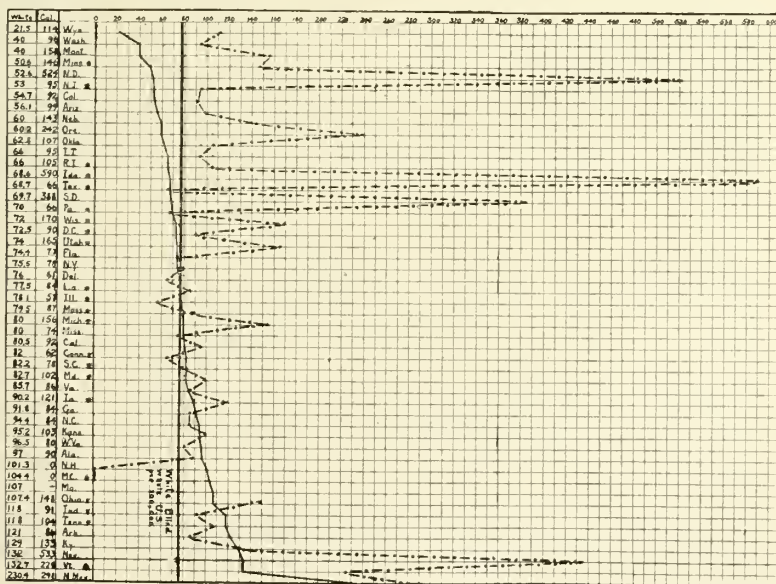


Chart showing blind per 100,000 population by states. Starred states have laws requiring midwives to report ophthalmia. The two columns of figures to the left show percentage of blind distributed between the white and colored races.

We know a little, but very little, of the training they get unless they are taught abroad. Seven schools were found that charge all the traffic bears, \$100 to \$175 for six months' training, on the average.

Some had no books, some gave no practical instruction. One school for midwives is run by a translator for the State Board of Health. The need for a judicial mind in such a situation is painfully apparent but as a financial possibility it "can't be beat."

How much do you fancy such schools teach about eyes and how to care for them? I judge these schools are still a valuable asset, as one of the nurses was called up and roundly abused for trying to get information from a pupil. They wish to be let alone; so do leeches.

TABLE 3.—CAUSES OF BLINDNESS IN 363 SCHOOL CHILDREN
Harmon, 1907, London.

Congenital	92
Ophthalmia Neonatorum, preventable disease.....	132
Congenital Syphilis, preventable disease.....	64
Optic Atrophy.....	34
Sympathetic Ophthalmia.....	10
Purulent Ophthalmia.....	8
Phlyctenular Ophthalmia.....	7
Smallpox	3
Malignant Disease.....	1
Others	12
Total	363

Outside of Jacksonville we do not know what part of the blindness is due to ophthalmia, as the U. S. census says only "sore eyes." Table 3 gives the results of one careful study in London. Lines 2 and 3, as you will see (196 children), are from preventable disease and must be prevented in the home as well as by the physician and midwife.

What should be done?

1. Simple notification of birth and its location should be received within forty-eight hours and inspection instituted by the Health Department. But this will cost money. Well! Does not Jacksonville and the Industrial Home, not counting the needless human agony of one-third of the blind?

2. Reporting ophthalmia should go forward, that we may know where we stand and who is to blame for our blindness.

Primarily we know that the infection is often due to wild oats sown years ago resulting in an almost forgotten discharge, but there is contact infection and we should know where that is and how much there is of it and who fails to recognize the danger in time to save the eyes.

3. Regulation of midwives and midwives' schools.

Legislation must be secured for inspection and yearly registration of midwives.

Stop the grafting on midwives. The midwives have a belief, to borrow a term from the Christian Scientists, that they have to pay money at intervals to keep their licenses, sometimes as much as \$100. They also believe that the man who takes the money has the same name as an employee of the State Board of Health.

TABLE 4.—STATES REQUIRING REPORTS OF OPHTHALMIA FROM NURSES AND MIDWIVES

Date of Legislation.	Arising period after birth.	Report after disease begins.	Report to whom.	Report how made.	Report what conditions.	Penalties	Responsibility of Report
Conn.	2 weeks	Within 6 hrs.	Lo. Health Off.	In writing....	Red, inflamed, swollen	Up to \$200 fine	Midwife, nurse or attendant.
D. C.	New-born ...	.....	Lo. Health Off.	In writing....	Inflam. and discharge	.....	Midwife, any person other than doctor.
Idaho	2 weeks	6 hours	Lo. Health Off. or to Phys.	.....	Red, swollen	\$100 fine and imp. or both	Midwife, nurse or other person.
Ill.	2 weeks	6 hours	Lo. Health Off. or Phys..	In writing....	Inflam., or reddening	\$10-\$50	Midwife or nurse.
Ind.	2 weeks	6 hours	Lo. H. Off. if no Dr. on case	In writing....	Inflam. or reddened	.....	Parents or caretaker if no doctor in charge.
Iowa	2 weeks	6 hours	Lo. Health Off. or to Dr.	.....	Inflam., red or secreting	\$25-\$100; 30 days	Midwife, parent, guardian or nurse.
La.	New-born ...	12 hours ...	Lo. Health Off.	.....	Inf., red or swollen	.....	Midwife or persons other than doctor.
Maine	4 weeks	At once	To Doctor....	.....	Inf. or red...	\$100; 6 mos.	Midwife, nurse or P. in chg.
Md.	2 weeks	Immediately	Lo. Health Off. or Dr..	.....	Inf. or red or pus	Max. \$100; 6 mos.	Anyone in charge. Doctor exempt.
Mass.	2 weeks	6 hours	Lo. Health Off.	In writing....	Inf., swollen, red or pus..	.....	Midwife, nurse, person in charge.
Mieh.	2 weeks	6 hours	Lo. Health Off. or Phys.	In writing....	Inf., swollen, red or pus..	.....	Midwife, nurse, person in charge.
Minn.	2 months ...	12 hours	Lo. Health Off.	In writing....	Inflamed .....	.....	Person in charge.
N. J.	2 weeks	6 hours	Lo. Health Off.	In writing....	Inflam., swollen, red disch.	.....	Doctors need not, person in charge.
Ohio	10 days	6 hours	Lo. Health Off. or Phys.	.....	Inflam., swollen	\$5-\$100; 30 days to 6 mo.	Midwife, nurse or relative.
Penn.	2 weeks	6 hours	Lo. Health Off. or Phys.	In writing....	Inflam., swollen, red	\$20-\$100; 10 to 30 days	Midwife, nurse or relative.
R. I.	2 weeks	Immediately	Lo. Health Off. or Phys.	In writing....	Inflam. or red	Max. \$100; 6 mos.	Midwife, nurse, or acting nurse.
S. C.	Anytime after birth	At once	Bd. Health....	.....	Inflam. or red	Max. \$25; 1 mo. or 60 dys.	Person in charge in towns less than 1,000.
Tenn.	2 weeks	Immediately	Bd. Health or Phys. ....	.....	Inflam. or red	.....	Midwife, nurse, person in charge shall apply no remedy.
Texas	New-born ...	12 hours	B. of H. or Ph.	.....	Inflam. or red	.....	Doctors exempt.
Utah	New-born ...	6 hours	Bd. of Health	.....	Inflam. or discharging	Misdemeanor	Doctors must report and treat accord. to state board of health.
Vt.	2 weeks	6 hours	Bd. of Health	In writing....	Swollen, red, disch. ....	.....	Nurse, relative or person in charge.
Wis.	2 weeks	6 hours	Bd. of Health	In writing....	Swollen, red, disch. or Inf.	.....	Nurse, parent or attendant.

The State Board protests in their bulletin that this man is impersonated. The Board should send as many midwives as they can find explicit directions in foreign languages not to give their money to strangers, else their belief might become a fixed delusion that our government is not run on the square and that might make the midwife lax about observing the law.

The schools should have registered standards set by law and supervision instituted.

4. A campaign of education should be undertaken on the causes of ophthalmia; not alone that silver nitrate will prevent development of germs in the infected eyes of the new-born but also that babies have a right to clean fathers and mothers free from voluntarily acquired venereal diseases as well as accidental contact infection.

5. Legislation must be secured not only permitting but demanding that a prophylactic be used by midwives and that every midwife be thoroughly and personally instructed as to proper methods.

APPENDIX

Recommendations of the Committee on Ophthalmia of the American Medical Association, Concurred in by the Public Health Association:

1. To secure laws requiring registration of births.
Midwives to be examined and registered in each county.
Midwives must report ophthalmia.
2. Health Boards shall educate as to dangers of ophthalmia, methods of infection, and prevention.
3. Distribution by Health Boards of supply of chosen prophylactic and explicit direction for use.
4. Records should be kept in institutions.
 - (a) Number of cases of ophthalmia.
 - (b) Treatment.
 - (c) Results that occur as well as blindness.
5. Reports periodically from doctors of the same.

DISCUSSION

Dr. C. E. Paddock: The symposium of this evening is timely and of value to the community. It is an advance step in the health progress of mankind that the laity begins to realize not only what the medical profession is doing for the prevention of blindness, but that they themselves by the knowledge of a few simple rules may greatly aid the profession in its efforts in this and other directions.

It is a pleasure for me to add from an obstetrical point of view a few words on the subject of to-night's discussion.

Frequently, a few hours to a few days after the birth of a child, there appears a condition known to the profession as ophthalmia neonatorum and known to the people as sore eyes. It is a serious infection usually, and in the past has been the cause of most of the blindness in babies. This disease is a preventable one if the eyes be properly cared for immediately after birth. Many states make it obligatory that the physician or midwife in attendance use a solution in the eyes of the new-born immediately after birth. The customary treatment is a 1 to 2 per cent. nitrate of silver solution.

Statistics are valuable only as their source is reliable. Statistics on this subject from the leading ophthalmologists and obstetricians throughout the world

prove conclusively that the treatment known as the Credé method has reduced blindness from gonorrheal infection to a minimum.

Ignorance of the scientific treatment of the eyes of a new-born is responsible for much blindness. The ignorance of the midwife is one of the factors we confront to-day. In most cases she is uncleanly, dominant and ignorant of scientific treatment and has but little right to be entrusted with the lives of a mother and child.

I am opposed to giving a man or woman a license to practice medicine who has not the preliminary education required of a student entering a medical college and who has not finished a complete medical course and earned a degree.

To specially educate women to practice medicine without the full medical course I oppose.

The only seemingly reasonable recognition of the midwife's right to practice is an economic one, but as later in the month in this course of lectures I am to speak on the relation of the midwife to the community, I shall not tire you by going into detail this evening.

It is the moral right of an expectant mother, poor or rich, to secure such care as will enable her to produce a healthy child. This cannot be done without skilled attendance during pregnancy and wise direction during convalescence.

Every new-born babe should be an asset to the state; one rendered blind by an ignorant attendant, one constitutionally weak due to lack of care during intra-uterine life is not an asset to the state but a charity.

Dr. Rachel Yarros wishes to emphasize the fact that at least 20 to 25 per cent. of all the blind can be directly traced to gonorrhea and syphilis, a very important point in a discussion which aims to educate the public. The time has come when the dangers of gonorrhea and syphilis in regard to eyesight should receive free and frank discussion by the medical profession and the laity. This is the main object of all the societies of social hygiene.

As to the question of the relation of midwives to the preservation of vision, I want to state that of the probable 50,000 births yearly in the city of Chicago, we find that about one-half are presided over by midwives. While we are making great efforts to improve the theoretical and practical courses in obstetrics in the colleges, which means furnishing the middle and better classes with more competent physicians, nothing is done in Illinois to furnish the large population with competent midwives, which they persist in employing, regardless of the danger to the mother and child.

We have not a single qualified school for the training of midwives or offering a postgraduate course to those who have been in practice for years. By ignoring their existence, we have failed utterly to abolish them. Would it not be wiser to follow the European plan by giving them proper instruction, as well as to bring them closer under the supervision of physicians?

IMMUNITY IN AND THE SPECIFIC TREATMENT OF PNEUMONIA*

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Although lobar pneumonia is a disease characterized by a very definite clinical picture and pathology, the fundamental questions of how the pneumococcus gains entrance, the mechanism of intoxication, and how the infected host rids itself of this microorganism are still quite obscure.

* Presented before the Chicago Medical Society, Dec. 20, 1911.

In the following pages I wish to give very briefly some of the more important facts which bear on these and allied questions.

That certain important changes which render us susceptible to virulent pneumococci (which we harbor most of the time) take place in the serum of the patient is indicated by the observation which I have made that pneumococci produce acid by growth in the serum obtained during the initial chill, whereas in normal serum the reaction remains normal.

Phagocytic Immunity.—The reason why non-virulent pneumococci are not able to cause infection seems to be due to their prompt destruction by leukocytes when injected into animals. Virulent pneumococci, on the other hand, and on this point all authors agree, are resistant to phagocytosis *in vitro* and when injected into animals. This resistance to phagocytosis, the subject of a special study some years ago,¹ seems to be due to a substance, "virulin," which goes into the sodium chlorid solution during autolysis. The pneumococci from which it has been extracted are now able to absorb opsonin from serum and are rendered phagocytal. While the part which goes in solution neutralizes opsonin and is taken up by certain strains of non-virulent pneumococci, rendering them relatively resistant to phagocytosis and virulent again. It has been shown that the pneumococidal power of pneumonia or other leukocytic blood is proportionate to the number of leukocytes present and the opsonic power and is due to phagocytosis and intraleukocytic destruction. Wolf,² Potter and Krumwiede,³ De Marchis (F.)⁴ and others have shown that the opsonic index to pneumococci, while below normal early in pneumonia, is above normal and at its greatest height at about the time of crisis in cases with a favorable termination, while in overwhelming infections the index remains persistently low. Observations on the opsonic index during experimental pneumococcus infections in animals show a similar course—in those which recover the index goes well above normal after an early negative phase, while in those which succumb it remains persistently below normal. From these observations it is clear that the opsonic index may be looked on at least as an index of resistance offered by the infected animal. As further evidence in favor of this form of immunity in pneumonia the following facts must be mentioned:

I have found that leukocytes from pneumonia during active leukocytosis are not only more active phagocytically, taking up more pneumococci than normal leukocytes under the same conditions, but they take up pneumococci of a higher grade of virulence. Tunnicliff,⁵ in an extensive study of this point, has found that the phagocytic power of the leukocytes in mild cases of pneumonia is increased. In severe cases, on the other hand, it is diminished while the severe symptoms are present, but when the patient improves, it rises above normal. Eggers (personal communication) has very recently shown that there is a very close relation

1. Jour. Infect. Dis., 1907, iv, 285.

2. Jour. Infect. Dis., 1906, iii, 731.

3. Jour. Infect. Dis., 1907, iv, 601, and Jour. Am. Med Assn., Nov. 30, 1907, p. 1815.

4. Lo Sperimentals, Ixii, 681.

5. Jour. Infect. Dis., 1911, p. 302.

between the antipneumococcal (phagocytosis and intraleukocytic destruction) power of the blood and the clinical symptoms in pneumonia.

In this connection the observations of Mennes⁶ should be mentioned. He observed that leukocytes in normal serum behaved indifferently toward certain virulent pneumococci, while after adding immune serum the cocci were taken up rapidly.

Clinical observations in pneumonia and studies in experimental pneumococcus infections indicate that leukocytes in some way play an important rôle in destroying pneumococci. The amount of phagocytosis in pus due to the pneumococcus or in the consolidated lung in pneumonia even during crisis is never very great. These and similar observation and the fact that virulent pneumococci are resistant to phagocytosis *in vitro* are used by some as arguments against the idea that phagocytosis plays an important rôle in combating pneumococcus infections.

The above observations certainly speak in favor of the view that certain primary changes take place within virulent pneumococci before they are phagocytable *in vivo*, just as has been found to be the case *in vitro*. The later phagocytosis and intraleukocytic digestion nevertheless is probably an important means by which the body destroys pneumococci and their toxic products.

Bactericidal Immunity.—All observers who have studied the effect of pneumonic serums or other pneumococcus immune serum on pneumococci have come to the conclusion that they possess no demonstrable pneumococidal powers. Pneumococci grow equally well (as determined by the plate method) in pneumonic serum at all stages of the disease as they do in normal serum. In an attempt to find out whether the pneumonic serum might not have effects on the pneumococci which are not brought out by the plate method I have made a microscopic study of the pneumococci at the same time, and found that both an increased rate of growth and death of the pneumococci takes place in pneumonic serum.

In a further study of the effect of pneumonic serum on virulent pneumococci as compared with normal serum the interesting observation has been made that ether-killed pneumococci disintegrate more rapidly in pneumonic than in normal serum.

Antitoxic Immunity.—The phenomenon of crisis would seem to be best explained on the ground of the development of an antitoxin. Neufeld and his associates found that pneumonic serum during crisis has distinct protective powers against pneumococcus infections in mice. The protection was limited largely to the homologous strains. Keyes⁷ has found that injections of large amounts of pneumococci into insusceptible animals—the barnyard fowl—yields an immune serum which has a definite protective and curative power over pneumococcus infections in white mice. Other observers have had similar results. The mechanism of the protection afforded by immune pneumococcus serums in these cases is not entirely clear but it is probably not a direct neutralization of toxic

6. Ztschr. f. Hyg., 1897, xxv, 413.

7. Jour. Am. Med. Assn., 1911, xvi, 1878.

substances as is the case in diphtheria antitoxins. Straus, S. (*Jour. Exper. Med.*, 1911, xiv, 109), and others, on the other hand, have not been able to confirm Neufeld's results.

Anaphylaxis in Relation to Pneumococcus Products and Infections.—The relation of anaphylaxis to lobar pneumonia and allied questions has been discussed recently;⁸ only a few brief statements are necessary here. The experimental facts, there given, prove quite conclusively that virulent pneumococci possess all the essential properties to cause intoxication forthwith without first sensitizing the animal as some would have us believe. On the other hand, some evidence has been brought forward in favor of the view that in certain cases of pneumonia (those having had a previous cold for a week or ten days) the onset may be due to the development of the anaphylactic state at this time and that crisis occurs when the patient becomes antianaphylactic. This idea is in keeping with the well-known fact of a very transient immunity in this disease. For the experimental facts on which these statements are based the reader is referred to the paper cited above.

The Specific Treatment of Pneumonia.—Two methods are at our disposal: passive immunization by the injection of so-called anti-pneumococcus serums in which we presumably inject preformed antibodies, and active immunization by the use of heat-killed pneumococci or other products of pneumococci in which we attempt to hasten the formation of antibodies in the patient. As shown above, various observers have been able to obtain antipneumococcus serums which protect animals against pneumococcus infections to a certain extent but when used in the treatment of lobar pneumonia they seem to fail. The literature contains numerous references to favorable results obtained by the use of various serums, but on studying the reports the number of cases treated is too few or some other factor has not been ruled out so that the seeming favorable results are to be explained largely on the ground of coincidence. The hope of obtaining a sufficiently active immune serum is small in the light of our present knowledge.

The value of inoculation of dead bacteria or vaccines in acute infections in general is questioned by many. The conditions at hand in lobar pneumonia are such that the hope of accomplishing much is quite small. It is well known that the injection of heat-killed bacteria causes first a negative phase in the opsonic index and then a rise above normal; the curve differs only slightly from that obtained in lobar pneumonia with recovery. The practical tests show no noteworthy decrease in the mortality.

For a number of years I have attempted to separate from pneumococci the toxic from the antigenic component. In this work I have been aware of the fact that many experimental facts suggest strongly that these are one and the same substance. I have, however, been able to separate from virulent pneumococci a large part of the toxic material which goes into solution on autolysis and have left in the pneumococci that part which

S. Jour. Infect. Dis., 1911, ix, 190.

stimulates antibody formation more promptly and more energetically without first producing a negative phase. The number of "detoxicated" or autolysed pneumococci inoculated can now be much greater than those merely killed by heat. When this material is inoculated within forty-eight hours after the onset of an attack of lobar pneumonia the course of the disease is often seemingly much modified. The temperature comes down within twenty-four or thirty-six hours and the patient recovers promptly; when given later, as would be expected, the effect is less pronounced. It is very difficult to draw conclusions of the value of any remedy in lobar pneumonia. In a series of cases at the Cook County Hospital last winter fifty treated and fifty alternate untreated cases, used as a control, the mortality of the former was 32 per cent., while in the latter it was 50 per cent.

I wish here to express my appreciation to the attending staff for the cases, the house staff for cooperation, to Dr. Hektoen for suggestions and the aid of Drs. Harms and Riley.

The number of cases is, of course, too small to draw conclusions; the results obtained look hopeful especially when one considers the most unfavorable conditions under which the work is done. The injections were nearly always made late, the type of infection was very severe and the kind of patients the worst possible to try any form of treatment.

The work is being continued. I have on hand a considerable quantity of material and would gladly let anyone have it for the asking. I must emphasize, however, that you do not wait until your patient is overwhelmed and the mechanism of immunity paralyzed, because then no amount of stimulation of antibody formation can do much good. The importance of using this antigenic substance early cannot be too strongly emphasized. It should be injected within twenty-four hours of the initial chill, if possible. It has been used so many times that I can vouch for its harmlessness.

DISCUSSION

Dr. W. S. Harpole: In the discussion of anaphylaxis several things occurred to me which I would like to have Dr. Rosenow answer. He referred to the respiratory difficulties produced in animals by anaphylactic phenomena. What animals did he use? Different animals, the dog, rabbit and guinea-pig, for instance, have been shown by Auer to die from distinctly different symptoms when they die from anaphylaxis. The guinea-pig has respiratory difficulty most pronounced and dies from it. The acute cases of anaphylaxis in man have seemed to show that form of death predominating. Of course, the opportunities of studying these phenomena in man are infrequent, but the resemblance between man and guinea-pig in that respect is interesting. The rabbit dies from acute rigor of the heart, especially of the right ventricle, and the dog dies from a rapidly falling blood-pressure.

Then I would like to ask the doctor whether he regards the phenomena following the injection of autolyzed pneumococci as anti-anaphylactic in character. Some of the animals that do not die from acute anaphylaxis show no anaphylactic phenomena on subsequent injection.

Another question I want to ask is, if the autolyzed pneumococci are used as a vaccine, why would it not be as valuable to use the non-virulent organism, as is being done in the manufacture of vaccines against typhoid and other diseases. They answer as well in establishing immunity as the virulent ones.

Dr. Rosenow (closing): My experience with anaphylaxis is limited largely to the injection of products of the pneumococcus. As to the cause of death in the animals mentioned it has been shown that it is different in the various animals. It is true that respiratory difficulty is shown most profoundly by the guinea-pig, moderately by the dog, and still less by the rabbit. The guinea-pig behaves most like man as far as anaphylaxis goes. The symptoms of anaphylaxis in man following the injection of horse serum are those of respiratory difficulty.

In a recent paper I discussed the question of anaphylaxis to pneumonia and, as stated, pointed out that the time of the initial chill might correspond to the time when the patient has become sensitized to the pneumococcus. In lobar pneumonia the initial chill frequently occurs after a severe cold or bronchitis has existed for a week or ten days. Experimentally I have shown that the repeated injection of dead pneumococci takes away this sensitiveness in guinea-pigs. Also that an animal after a marked but not a fatal reaction to a pneumococcus extract is no longer sensitive. The sensitiveness disappears too when the animal passes through a pneumococcus infection. Hence the crisis may be an expression of the development of anti-anaphylaxis. Wolf has shown that the injection of non-virulent pneumococci is not followed by demonstrable rise in opsonin. I have tried to immunize animals with non-virulent strains of pneumococci without success.

The viscosity of the blood is increased especially when the symptoms are very pronounced. Large doses of potassium iodid as well as small doses have been given with the idea of lessening the viscosity of the blood and favoring its circulation. The increased viscosity of the blood probably does not materially affect the mortality. However, every effort should be made to reduce the toxemia because that is really at the bottom of the trouble. Elimination does help somewhat and I take exception to the statement that there is nothing to do for the pneumonia patient. A pneumonia patient properly cared for along the lines so admirably laid down by Dr. Babcock, stands a better chance of getting well than the patient who is left to himself.

A CONSIDERATION OF A FEW POINTS IN THE GENERAL MANAGEMENT OF PNEUMONIA*

ROBERT H. BABCOCK, M.D., LL.D.
CHICAGO

We all see cases of this dreaded disease in which the balance between the individual's resistance on the one hand and the onslaught of the invading organism on the other is so evidently on the side of the patient that the most we are required as practitioners to do is to let Nature fight it out with only such aid as good nursing may afford. There are other cases in which the patient is overcome from the start and we are powerless to avert the disaster by our most skilfully employed means. Others again there are in which the forces of resistance and attack seem so evenly balanced that the result may be said to depend on the skill of the physician in rendering assistance at just the right time or in proper degree. It is of course with regard to this last group of cases that I have ventured to offer my remarks this evening.

So much has been written and said in respect to the benefit of fresh, cool air for pneumonia sufferers that the public has become accustomed to this notion and physicians no longer or but rarely have to overcome prejudice in favor of closed windows, overheated atmosphere, and a mass

* Read at a meeting of the Chicago Medical Society, Dec. 20, 1911.

of bed-clothing reinforced by the cotton jacket. In other words, the hygiene of the sick-room is so well carried out ordinarily that to dwell on it now would be an insult to so intelligent a body of hearers. There is only one point in this connection which it may be well to emphasize, namely, the advisability of destruction of the sputum and of protection both of the patient and of his attendants against infection through the microorganisms ejected by the act of coughing and eliminated by the excretions. The better ventilated the room, the less the liability to infection from this source and yet scrupulous cleanliness of the patient's face and hands and adequate destruction of the sputum together with proper care of the urine are none the less advisable.

I shall say nothing in particular as to the diet further than to urge that it be mainly or exclusively liquid and of such a kind and given at such regular intervals as will diminish the likelihood of flatulent distention of the gastro-intestinal tract. Since free hydrochloric acid is said to be lessened or even absent in temperatures above 101.5 F. it is well to administer this acid regularly after the ingestion of food, even milk. In this connection let me insist on the exhibition of as large quantities of water as the patient can tolerate without actual distress.

With aged persons or those whose kidneys cannot excrete large quantities of water care should be exercised lest the vessels be overfilled and the heart overstrained. But if the kidneys are functionally competent too much fluid can scarcely be taken, since the better the elimination the better should be the prospects.

Much medication is not desirable for several reasons, and yet it may be well in some cases to stimulate the excretory organs by simple diuretics and diaphoretics such as bitartrate or citrate of potassium and when blood-pressure is high the sweet spirit of niter. A cathartic daily is advisable and in my opinion a saline aperient water is best, provided it does not occasion too much flatulence.

Nitroglycerin or other nitrite preparations should never be ordered as a routine practice. The effect of pneumococcus poisoning on blood-pressure seems to vary in different cases. Consequently the sphygmomanometer should be used daily if possible and the use of vasodilators and heart tonics governed by the readings of the instrument. Should cyanosis become unusually pronounced and according to the experiments of Romberg and Paesler indicate threatening capillary paresis from the toxic effect of the poison on the vasomotor center in the cord, then vasodilators are distinctly contra-indicated and adrenalin or cardiac stimulants, as digitalis, are to be used and used freely. This indication is especially urgent if Gibson's danger sign is present, namely, a pulse-rate whose figures are higher than those of the blood-pressure. Death may not supervene in all such instances, but this condition calls for prompt and vigorous treatment.

Pain is in some cases so distressing as to demand special measures for its mitigation lest it rob the patient of rest and augment his exhaustion. When local applications do not relieve the physician should not hesitate to administer a hypodermic of morphin since unless plainly

contra-indicated by diffuse bronchitis it is likely to do far more good than harm. Years ago when beginning practice in Chicago I had occasion to utter this statement at a meeting of this Society and was severely criticized by a well-known practitioner and teacher on the ground that morphin did harm by checking bronchial and other secretions. Nevertheless I believe my position in this matter is a correct one and that physicians of experience will support me in this opinion. It is generally in the later stages of the disease that opiates are likely to prove harmful and yet even then no hard and fast rule should be laid down.

Objection is sometimes raised to the administration of morphin in the aged on the ground of its checking renal excretion, but most old subjects have arteriosclerotic kidneys rather than a true interstitial nephritis, and when such is the case morphin judiciously exhibited, by allaying pain and restlessness, proves no less a boon than in young adults. In children of course pain must be allayed by some other means than hypodermics of morphin, but when external applications soon to be mentioned are not effective codein either alone or along with a bromid has proved highly satisfactory in my hands.

In advocating the employment of an opiate for relief of distressing pain I do not forget or wish to ignore the usefulness of local applications either in form of sinapisms, poultices or the ice bag. Although an ardent advocate of cold to the chest in pneumonia both for relief of sharp pleuritic pain and reduction of high temperature, still I must admit that in some instances heat is far more effective as an analgesic and is more acceptable to the sufferer. Nevertheless I believe the ice bag should always be tried and given the preference since it tends to quiet the nervous system and keep down fever. The application of some of the pastes, notably antiphlogistine, of which some physicians are so fond, is to my mind extremely objectionable on several grounds. Doubtless some here will advocate its use, but I believe just as much can be accomplished by far less objectionable and nasty means. Strapping the painful side is often an extremely beneficial measure when properly done and should not hamper respiration to any harmful extent. It is really a more effective means of accomplishing just what the patient tries to do by his superficial and rapid breathing. Whatever the means employed they are hardly likely to do as much harm as the continuance of the symptom, and it cannot be too strongly insisted on that the ultimate outcome may depend largely on the physician's skill and judgment in combating dangerous symptoms.

Insomnia is another symptom which in some instances is so persistent as to constitute a veritable complication of evil influence in prognosis. Early in the disease this wakefulness is due to pain or pyrexia, whereas later on it is a result or expression of toxemia and exhaustion. Ordinary hypnotics rarely accomplish the result desired so satisfactorily as morphin or some other form of opium. It is my conviction therefore that an opiate, by preference a hypodermic of morphin, not only will induce sleep but exerts a salutary and calmative influence on the nervous system and thus favorably affects the course of the pneumonia.

When insomnia is due to fever it is rational to endeavor to induce sleep by reducing the temperature. Accordingly sponging with cold water or in children a bath or the application of an ice bag is to be tried and sometimes may promote the desired sleep. When this fails, however thoroughly done, then in my opinion an opiate is indicated. When later in the disease persistent wakefulness is a result of the toxemia, the question of how best and most safely to induce sleep may become a difficult one to answer. At this time there is often more or less associated bronchitis, and when this is present, remedies which, like opium, obtund the sensibilities and inhibit cough and expectoration, must be used, if at all, with great caution. Now it is that stimulants are likely to render valuable assistance. A wine rich in ethers and not containing so high a percentage of alcohol as whisky should be selected, and such a cardiac stimulant will often promote rest and some degree of sleep. But should exhaustion from insomnia seriously threaten the patient and bronchitis be not pronounced, then a hypodermic of morphin (one-eighth of a grain), which is not strongly narcotic, will be likely to do much good even if it does not cause sound sleep. Morphin at this time seems to me preferable to heroin either by mouth or under the skin since it does not so profoundly quiet the cough. According to my experience the usual hypnotics, veronal and the like, chloral and bromid, do not prove efficacious in conditions of toxemia of whatever nature, and hence I rarely prescribe them in pneumonia.

Tympanites is another symptom that at times proves a very serious complication. In some instances this abdominal distention is caused by fermentation of the food, and when this is the case it may usually be relieved by dietary change or restriction according to the judgment of the medical attendant. Cathartics, enemata and turpentine stupes on the abdomen are well-known measures in this condition. But occasionally meteorism is a manifestation and result of toxic paresis of the intestines and is a formidable condition. In some instances it resists all attempts at its relief, but I desire strongly to recommend so soon as this form of tympanites is suspected the use of an enema of asafetida made by rubbing up 75 grains of the drug in 3 ounces of yolk of eggs. This emulsion thrown high up into the colon often acts as a powerful stimulus to contraction of the bowel, and I recall one case in which this remedy appeared to overcome what gave promise of being a most serious and rapidly forming meteorism.

Collapse is not of frequent occurrence in pneumonia, yet is so alarming a condition that one should always be on the lookout for its early detection and should have suitable remedies at hand. Since a deceptive fall in peripheral temperature may usher in the collapse, it should be an invariable rule to have the temperature recorded by rectum, not by mouth or axilla. So soon therefore as coolness of the surface, increasing cyanosis and weakness of the pulse lead one to suspect approaching collapse, prompt and energetic measures should be instituted in the hope of warding it off. We may not be able always to combat it successfully, but its prompt recognition and an intelligent appreciation of indications may aid much by wisely directing the means to be employed.

Stimulation is now required and must be used often and vigorously, and to this end nerve and heart stimulants not vasodilators are necessary. It is not my intention to describe in detail the treatment suitable in collapse, but I desire particularly to urge the use of the asafetida emulsion previously mentioned, the same as for relief of tympanites due to intestinal paresis. This good old-fashioned remedy has fallen largely into disuse, for few seem to appreciate how powerful a stimulant it is to the nerve centers and hence to circulation and respiration. In addition to the injection of the emulsion of asafetida, heat to the surface and a drink of hot coffee, hypodermics of musk and perhaps of camphor are highly serviceable. So great is my faith also in musk as a cardiac stimulant that I always keep it in reserve in cases of pneumonia. The formula for its preparation is as follows: good Tontine musk, 1 gm., benzoate of sodium 0.5 gm. and distilled water 15 c.c., of which the dose is 15 to 30 minims (1 to 2 grains of the musk) injected beneath the skin. As this drug is difficult of solution and requires slow filtration to rid it of impurities, a certain pharmacy in this city is kind enough to keep a solution always in stock and sells it at a reasonable price, about 10 cents a grain instead of a dollar as is charged by many druggists.

In urgent cases this remedy is injected hourly and in my hands has proved a powerful cardiac stimulant. I do not approve of nitroglycerin in this condition or of whisky or brandy on account of their high alcoholic content, since arterial tension is already low and what is needed is a remedy that acts directly as a cardiac stimulant instead of indirectly through relaxation of the vascular system. If necessary camphor hypodermically may also be used and if the pulse becomes very rapid and weak caffein or digitalis may be thrown under the skin or into a vein. But caution must be exercised if this latter remedy has been taken throughout the course of the illness.

I have had no experience with the intravenous injection of strophanthin from which such remarkable results have been reported in the east. It is highly dangerous if digitalis has been taken previously because it so powerfully reinforces the action of the foxglove, and as most of my cases of pneumonia nowadays are seen in consultation I generally find present this contra-indication to the intravenous administration of strophanthin.

I have tried a hypodermic injection of atropin in collapse, but have not been able to perceive any pronounced or lasting effect from this remedy any more than from nitroglycerin, and probably for the same reason, namely, that the circulation requires a powerful cardiac rather than a vasomotor stimulant, by which is meant a drug that acts on the heart directly rather than one that dilates the capillaries and thus indirectly urges the heart to more rapid and vigorous contractions. It might seem that this principle of management contra-indicates the application of heat to the surface of the body. But heat does something more, as it seems to me, than merely dilate the superficial vessels. It creates a sensation of warmth and stimulates the nerve centers and thus reinforces the effect of cardiac stimulants. It is well to caution the nurse, however,

against the use of too great heat or its too prolonged application to one part. The capillary paresis responsible for the collapse or at least so important a factor in the condition, renders the skin very liable to burn, and ignorance of this possibility caused in a case seen by me quite extensive burns. Finally, in combating the collapse of pneumonia the attendants should keep up their efforts as long as life continues, for we may be surprised sometimes by recovery even after long-continued efforts seem unavailing.

In concluding these remarks, which I am conscious do not present any new or startling features, let me urge the importance, nay necessity of close watch of every pneumonia patient by the physician. Changes for the worse may come so quickly and unexpectedly, even when the case seems progressing favorably, that the doctor should see the sufferer frequently and should keep in close touch with the case through telephonic communication with the nurse. On signs of approaching danger, such as fall in blood-pressure, and at the time of crisis this is especially imperative, and if need be the physician should not hesitate to remain in the house over night. In no acute disease are good nursing and intelligent care by the doctor so necessary as in acute pneumonia. Moreover, the time for medicines, nourishment, etc., should be so ordered that the patient may be disturbed as seldom as possible.

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DISCUSSION

Dr. E. F. Wells: This paper deals largely with facts and experience. Every point made with regard to the management of pain meets with my approval. It is in the details of the management of pneumonia that success or failure will be attained. There are some conditions in pneumonia in which morphin cannot be replaced by any other drug. At the very beginning of the illness there is a stage of excitement, which may seem independent of pain and which can be relieved almost magically by morphin. The dose need not be large nor even dangerous. It is surprising how small a dose will relieve the nervous system and dispel the pain in the very first hours of the attack. One-eighth or even one-twelfth may be given and repeated after an hour or two, if necessary. Personally, I very much prefer small doses, repeating, if necessary, rather than to give a large dose which might be harmful. The repose, the re-enforced fortitude which can be given the patient can scarcely be realized unless one has observed these cases.

The pain in pneumonia early is ordinarily attributed to the involvement of the pleura. Experience shows that the pain is sharpest at the onset or shortly afterward, certainly during the first day. On the second day, without morphin or any application, the pain is materially reduced in acuteness and on the third day it is much reduced. Unless there is extension of the pleural involvement the pain is not very acute. So that we should not attribute all the relief from the pain, especially on the second or third day, to any morphin which may have been given, or to any other measures to which recourse may have been had. It is seldom following the initial use of morphin that it will be required for several days.

A very frequent cough may require minute doses of morphin, 1/16 of a grain, hypodermically. Later on when the insomnia appears, morphin, combined with stimulants, will often induce sleep when the ordinary hypnotics fail. Late in the disease, when general failure is imminent, a small dose of morphin is the most powerful stimulant, and it is my belief, as was stated by Dr. Babcock, that it will often turn the scale in the right direction.

It is useless to try to stimulate a dying patient with morphin. When a patient has been lying awake two or three nights, obtaining no sleep day or night, morphin will not perform the same miraculous effects which it may at the beginning of the insomnia. Further, the giving of morphin from first to last, keeping the patient in a semicomatose condition all the time cannot be otherwise than pernicious. The age of the patient should lead to a careful consideration of the dose of morphin, but not necessarily to its disbarment from either end of life. In the case of the child a few drops of paregoric will often be sufficient. The child does not manifest the same pain as the adult. The same applies to senile cases. The pain is remarkable for its slight degree and often for its absence. So that in my opinion, if it is required, it should be given but with discrimination. I am sure that if these small doses are given and the effect watched, the use of quarter grain, half grain or even grain doses will not be resorted to.

Passing along to the management of collapse or profound toxemia and depression, the close attention which will anticipate the checking of these will lead to success, even when the same measures used when the condition is well advanced will lead to failure.

As to prevention. There can be no question as to the evil influence of intestinal stasis. Therefore, immediately on entering on the management of a case of pneumonia I attempt to clear the intestinal tract and keep it clear. The patient's bowels are moved regularly, certainly twice a day and oftener if required. The patient is placed on a light diet and then these movements may be obtained by simple laxatives or by enema or glycerin suppositories. I direct that a simple laxative be given once a day, and that another movement be obtained ten or twelve hours afterward by the use of an enema or suppository. The enema should be stimulating. The glycerin and epsom salt enema, in my opinion, is the best, however not in the 2-2-2 preparation of the hospital, but 2 ounces of epsom salt, two ounces of glycerin and twelve ounces of water. It will exercise the stimulating effect that the intestine requires. I have never seen it fail. That will keep up peristaltic movement and prevent distention.

Strychnia is probably a useful remedy, one-thirtieth grain, every three hours, used throughout the disease, and especially if there is any tendency to a parietic condition of the intestine. Salol in small doses cannot have any effect, but a grain, every two or three hours, will prevent that foul condition of the intestines which sometimes occurs. I use it when there is the slightest indication of foulness of the discharges.

In the final stages of the disease, when things are taking an unfavorable turn, there again the early use of stimulants is the keynote to the situation. Oxygen, of course, has been decried, but I use it, although early before its use appears to be necessary, and certainly with the slightest indication of cyanosis or where the arterial side of the circulation becomes collapsed at the expense of the veins. Then I make use of it more or less freely. Digitalis I usually recommend from first to last, an efficient preparation in moderate doses. With that you will have prepared your ground for the prevention of collapse and those frequently fatal conditions occurring late in the disease.

As to the use of stimulants. I am heartily in favor of them, although I would anticipate their necessity by the use of the preventive measures mentioned. Musk I have seen used and largely, especially in my early practice, and I have thought it to be useful. It is, of course, difficult to determine the value of any remedy in these advanced cases. I am quite sure that no measure will prevent the completion of death once started.

The various local applications mentioned I have dispensed with. I see no advantage in their use, except for the comfort of the patient. If he prefers hot applications, I see no objection; if he prefers cold, I use it. The heart is made very comfortable by the use of an ice bag, but cold has not given much relief from the pain. Close observation by nurse and physician are the most essential things in these cases, as was emphasized by Dr. Babcock. Constant vigilance is important

in every case of pneumonia and there should be no hesitancy on the part of the patient in maintaining constant attendance.

Dr. Edward H. Ochsner: It is a well established fact that one of the best therapeutic agents in all forms of infection is absolute rest. I have often wondered why this agent is not made use of more often in pneumonia than it is. We have all seen chests strapped in pneumonia, but rarely have we seen them strapped effectively. I think one reason that strapping is not used more is the fact that medical men as a rule are not aware of the fact that the chest can be rendered as immobile as most other regions of the body, and if rest is good for an infected hand, it is also good for an infected lung. One of the greatest benefits of rest in infection is the prevention of septicemia. *Staphylococcus* and *streptococcus* septicemias are bad, and so is a *pneumococcus* septicemia. If the first two can be greatly reduced by securing proper rest of the infected part, I believe that a *pneumococcus* septicemia can also be prevented to a great extent by immobilizing the chest involved.

Professor Hall of this city some years ago invented a chest pantograph, and any one can use it to determine whether he knows how to immobilize a chest. I have made the experiment many times on strong robust individuals and have found that the chest in health can be very nearly immobilized, but you must go at it in a systematic way. The first strap must extend about two inches below the last rib and two inches beyond the middle of the spine behind and the middle of the sternum in front. The straps must overlap, using four layers of straps, one across, two diagonally and one from above downward and over the shoulder. A chest so strapped is practically immobilized.

The two forms of rest usually employed are rest of the whole body and rest of the infected part. We can accomplish body rest by recumbency in bed and rest of the part by strapping or by a splint. For something like fourteen years I treated all cases of pneumonia in this way. I have seen some desperate cases following gall-bladder operations, and such cases are about as desperate as one can get. I observed that proper rest will greatly reduce the mortality, and by proper strapping in the majority of cases the patient will get well by lysis and not by crisis.

In the ordinary case of pneumonia the patient forces into his circulation at one and the same time with great rapidity both the toxins and antibodies. If the rapidity with which the toxins are forced into the circulation is reduced, as I believe it can be with chest immobilization by proper strapping, the patient will be immune before he or she is overwhelmed with the poison. He will not as a rule suffer from nearly as great restlessness, intoxication or septicemia as if proper strapping is neglected.

Dr. F. Tice: I am not in sympathy with local applications in pneumonia. Pneumonia is a systemic infection and therefore cannot be materially influenced by any local application. No one would think of making a local application in typhoid with the idea of influencing the course of the disease. It is a systemic infection analogous to the infection of pneumonia.

Occasionally it has been customary to employ strapping of the chest. It has been my experience in some cases that such strapping produces such dyspnea that the straps had to be removed. The use of straps and the ice bag and the coil have given way to small doses of morphin. There are so many conflicting things in the treatment of pneumonia that every one has developed his own method of treatment.

The active treatment of pneumonia resolves itself practically into the fighting of a toxemia. It is admitted that death in pneumonia is due to cardiac failure, but not from cardiac involvement. The toxemia produces a vasomotor paresis, and it is to this that we direct our special attention in treatment. We cannot limit the amount of toxins produced, nor can we neutralize the toxins after they

are produced. Consequently, we must direct our attention to the evil effects of the toxins, which means, in the majority of cases, cardiovascular failure. Therefore, we use digitalis, frequently by the intravenous method, using digalen or digipuratum, with occasional doses of atropin.

Dr. Babcock (closing): It was not my intention to discuss the management of pneumonia in detail or the various remedies which may be employed or have been employed. I heartily concur with what Dr. Tice said with reference to the danger of cardiovascular failure, and it was for this reason that I dwelt especially on the use of certain cardiac stimulants rather than on remedies which act on the heart indirectly as vaso-dilators. I deplore the routine employment of nitroglycerin; it is for this reason that I advocate, when stimulation is required from threatened exhaustion or insomnia from exhaustion, a good wine rather than whiskey or brandy. The latter have so high an alcohol content that they act as vaso-dilators, whereas claret and some other wines rich in ethers, are true cardiac stimulants and are low in alcohol content. In my opinion these render decided service. It is because of this action on the blood-vessels that I mentioned the remedies I did. Musk is a true heart stimulant, the purest heart stimulant. That is why I mentioned digitalis and caffein. I did not mention ammonia, although it is often very serviceable when the patient's nervous system will tolerate it.

DISEASES OF THE HEART AND BLOOD-VESSELS

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CASEY, ILL.

Mr. Chairman and Fellow Physicians of the Clark County Medical Society: The topic under discussion is an inexhaustible subject, and it will be impossible in the time allotted me this afternoon to go into it in detail, and I will of necessity omit some of the rarer affections. In taking up diseases of the heart I will first say a few words on general symptomatology.

Cardiac asthma or dyspnea is commonly the first symptom of heart disease. It is first noticed only on exertion, but in more advanced cases it becomes more or less a permanent symptom, and is usually caused by valvular insufficiency which allows the blood to back from the left side of the heart into the lungs, making pressure on the air vesicles interfering with access of air to the blood, or it may be due to a dilatation of the left ventricle as in senility, or in cases with a contracted kidney.

Palpitation is the next characteristic and frequent symptom of heart disease. It is more common in mitral than in aortic disease and varies in severity, being scarcely noticeable at times, but often very distressing. Slow pulse is often met in heart disease, a pulse of less than forty being termed bradycardia. It usually indicates muscular disease of the heart and coronary arteries, but may be due to deranged nerve control which is usually affected by the inhibitory nerves with their ganglia situated in the heart muscles. Pain is not as frequent a symptom as dyspnea or palpitation, but we have two varieties in heart disease, the dull aching

of mitral disease and the sharp pain radiating down the left arm, as in angina pectoris. Sometimes the patient complains as if the heart were compressed in a vice. So much for general symptoms.

We will now take up *acute pericarditis*. Definition: Inflammation of the serous covering of the heart due to toxic substances in the blood, such as developed in infectious diseases, also in rheumatism and traumatism.

Symptoms: Sometimes chilly sensations, a sense of discomfort in the cardiac region, or sometimes sharp pain with dyspnea. There may, or may not be much elevation of temperature. The pulse is rapid and the patient complains with a general feeling of discomfort.

Prophylaxis: There is not much that we can do in a preventive way more than the ordinary prophylaxis of rheumatism.

Medicinal treatment: No matter how mild a case, the patient must be put to bed and absolute rest, both physical and mental be insisted on. Evacuate the bowels with mercurials and salines, watch the heart closely and if the pulse should become weak or rapid and irregular give digitalis with strychnia. Place ice over the heart and give liquid diet, milk being especially indicated. It is important to keep up the diet for fear of softening of the heart muscles. For pain and restlessness use bromids; if they fail to relieve we have to resort to morphin $\frac{1}{4}$ gr., hypodermically, with atropin $\frac{1}{150}$ gr. Valerian preparations are nerve sedatives and cardiac tonics; therefore they should be tried. Counterirritation with cantharides or iodine is recommended by some authors. Personally, I have had no experience with it. Potassium iodid should be given to absorb the exudate. For pericarditis with effusion, the above treatment plus active diuretics to get rid of the fluids. Use cathartics and diaphoretics very cautiously for fear of too much prostration. If the effusion increases with increased dyspnea, surgery should be resorted to. Paracentesis gives marked relief. Authors differ as to the best location to introduce the trocar.

Acute Endocarditis.—Inflammation of the lining of the heart, usually confined to the valves. Two forms: acute, characterized by growth of vegetations with loss of substance in the valve tissue; chronic, a slow sclerotic change resulting in thickening and deformity. These two varieties are also classed as simple and malignant. The simple variety does not constitute a disease in itself, but is found with other affections, such as rheumatism, tonsillitis, scarlet fever and all wasting diseases, such as Bright's disease. The malignant variety occurs as a secondary affection in acute rheumatism, pneumonia and all septic fevers.

Symptoms are very uncertain, oftentimes resembling typhoid or puerperal fevers.

Treatment: Place the patient in bed with ice to the heart, daily evacuation of the bowels with calomel and salines, and liquid diet. If the heart is excitable give aconite and watch the pulse. For the malignant variety find cause and institute a specific treatment. Antistreptococcic serum is valuable in some cases. Arsenic and iron have been highly beneficial and antipyrin is also recommended.

Let us now take up diseases of the valves of the heart, a subject which is very interesting but requires a great deal of patience and skill to arrive at a diagnosis.

We will first consider *mitral insufficiency*. In this the valve leaks, allowing the blood to flow backward during systole, from the left ventricle to the left auricle. The distended auricle first attempting to resist the backward flow hypertrophies, but eventually dilates, and the blood is crowded backward into the lungs, which become engorged. The right ventricle in its effort to push the blood through the engorged lungs hypertrophies, and the pulmonary factor of the second sound becomes louder and accentuated. The thickened right ventricle makes up for this loss of the weakened valve, then the left ventricle hypertrophies and compensation is maintained and the patient apparently suffers no inconvenience. Sooner or later the right ventricle dilates, the tricuspid valve becomes insufficient and the blood regurgitates into the right auricle and thence into the great veins of the neck. The valves of these finally yield, the jugular pulse appears, and the general venous system is engorged.

Causes of insufficiency: Endocarditis and dilatation of the ventricles and large arteries leading from the heart, the valves themselves remaining intact, but being too small to properly close the abnormally large orifice.

Symptoms: First, cardiac asthma, then palpitation and irregularity which means loss of compensation and congestion of the lungs. Dyspnea is a permanent symptom, being sometimes so severe that the patient has to remain in a sitting posture, a condition known as orthopnea. We now have frequent attacks of bronchitis, with blood-stained expectoration. The liver becomes congested, enlarged and tender, and there is also congestion of the mucous lining of the stomach, causing nausea and indigestion. The liver enlargement becomes sometimes very great, and is often the seat of pulsation, and as often the jugular pulse is seen. Both signs are pathognomonic of mitral regurgitation. We also have passive congestion of the kidneys with a scanty urine, high specific gravity, and sometimes albumin and casts. Then comes edema commonly called dropsy, first affecting the feet and legs, then the trunk and face, and finally the pleural and peritoneal cavities.

Physical signs: Inspection shows the apex beat at the left of its normal position in the fifth interspace, sometimes a little lower. It is more forcible and diffuse than in health. This outward dislocation of the apex beat is due to the enlargement of the two ventricles. On palpation there may be a pulsation felt near the ensiform cartilage, caused by systole of the enlarged right ventricle. As compensation gives way the apex beat becomes weaker and irregular. Percussion detects an enlarged area of cardiac dullness. Auscultation reveals a blowing murmur heard in the mitral area, transmitted to the left axilla and under the angle of the scapula.

Aortic Insufficiency.—Symptoms: forcible cardiac action with characteristic water-hammer pulse, headache, insomnia, tinnitus aurium, congestion of eyes and face, precordial pain of a constricting character, or may be shooting pains, extending down the arms, also palpitation and great

anxiety. When compensation ruptures, dyspnea develops with cyanosis and dropsy. If mitral regurgitation is now added, death soon follows. Sudden death is frequent in aortic insufficiency. Inspection shows the cardiac impulse is displaced downward and to the left. Auscultation reveals a characteristic murmur heard at the second right costal cartilage but best heard at the juncture of the sternum with the fourth left costal cartilage.

Tricuspid insufficiency is caused generally by the dilated right side of the heart from pulmonary obstruction or a result of mitral disease, which causes an abnormally large tricuspid orifice.

Symptoms: Venous stasis, jugular pulsations occurring at the same time with the heart's action, cyanosis, dyspnea and obstinate dropsy. Auscultation elicits a blowing murmur at the juncture of the fourth and fifth ribs with the sternum, distinct over the ensiform cartilage, becoming feeble or lost in the left axillary, often associated with a mitral murmur.

Treatment of Valvular Diseases.—Not every patient with valvular defects needs medicinal treatment, but should be warned to avoid excessive exercise, excitement, mental worry and especially anger. But in the more advanced cases, mental and physical rest is imperative. Liquid diet, especially milk, is indicated. Digitalis in some form leads the list in treatment of valvular diseases, a dose of the tincture, 5 to 15 minims, being given every four to six hours. It seems to aid compensation almost like magic, making the irregular intermittent pulse regular. Cyanosis disappears, dyspnea and restlessness give way to a sense of comfort, and the urine is increased. For engorgement of the liver and stomach give large doses of calomel followed by salines next morning. Some authors use strophanthus in preference to digitalis, where the stomach is irritable. Caffein is a good heart tonic, being given in doses of 1 to 3 grains every four to six hours, but is sometimes objectionable on account of unpleasant mental symptoms and insomnia. Some authors use spartein sulphate, $\frac{1}{4}$ to $\frac{1}{2}$ gr. every three or four hours. It is especially indicated for its diuretic effect. In purely aortic diseases digitalis is contra-indicated because of the full, strong pulse due to hypertrophy of the right ventricle. Tincture of aconite and veratrum with potassium bromid acts pleasantly in such cases with a full and excitable pulse. Of course they should not be long continued. Strychnia is indicated to maintain muscle tone. Arsenic and iron are good tonics.

Treatment of dyspnea: Dyspnea is frequently caused by effusion into the pleural cavity; therefore it is most promptly and successfully relieved by tapping. Hoffman's anodyne, or any of the simple hypnotics are first to be tried, but if necessary use morphin.

Treatment of dropsy: Restrict ingestion of much liquids, and allow milk for nourishment, giving about 3 ounces every two hours. Restrict solid foods until edema disappears. Large doses of Epsom salts every morning greatly aid in the elimination of liquids. Digitalis and nitroglycerin is a good combination in dropsy until free diuresis is estab-

lished. Nitroglycerin aids by dilating the renal artery. Calomel, $\frac{1}{2}$ gr., squills and digitalis of each 1 gr., every three or four hours, is a splendid diuretic. As the dropsy disappears, cautiously increase the milk and return to solid foods. For irregularity of the heart's action, belladonna and nitroglycerin are a good addition to digitalis.

We will now consider dilatation of the heart: This is an increase in size of one or more chambers of the heart, usually the right side, with feeble pulse, cyanosis and exhaustion.

Causes: Bright's disease, alcoholism, bronchitis and overexertion, as in athletics.

Symptoms: feeble pulse, headache, more pronounced in sitting or upright position, cough, disturbed digestion, dyspnea, scanty albuminous urine, vertigo, and finally dropsy of the lower limbs. Auscultation often reveals murmurs, but when they are not present the heart sounds are weaker than normal, and the first sound is sharper in quality than usual.

Treatment: This affection is incurable, but much can be done to temporarily relieve symptoms and prolong life. First indication: steady and control the heart's action and build up the general nutrition. Such drugs as digitalis, nux vomica, caffeine, spartein and strychnia are used to meet cardiac symptoms. Iron and arsenic are valuable to build up the general nutrition. The bowels, skin and kidneys must be kept in action with such drugs as calomel, podophyllin, squills, scoparius and potassium acetate. Hoffman's anodyne for dyspnea. Dropsy should be controlled by such measures as have been mentioned in the previous diseases under discussion.

Angina pectoris, commonly called neuralgia of the heart, is caused by the faulty nutrition due to obstruction of the coronary circulation or various valvular defects.

Symptoms: intense agonizing pains in the region of the heart, radiating down the left arm, shortness of breath, feeble pulse, anxious expression, fear of impending death, and cold sweat. Attacks last only a few seconds and usually terminate fatally, but not always. When they do not end fatally the patient is greatly prostrated, with nausea and vomiting, excessive urination and extreme nervousness.

Treatment of the attack: Inhalation of amyl nitrite, 3 to 5 minims, or chloroform, morphin hypodermatically with atropin, and also chlorodyne, nitroglycerin and spartein are very beneficial. Counterirritation over the heart gives some relief. During the interval between attacks endeavor to remove the exciting cause. Observe the diet closely to prevent constipation and flatulency, and also avoid mental worry and physical exertion. For structural changes in coronary arteries give potassium iodid, 10 to 20 gr. three times a day. Give constitutional tonics. Belladonna is indicated to relieve or lessen arterial tension.

Arteriosclerosis: This is a degenerative inflammatory disease of the arteries with calcareous deposits.

Causes: senility, Bright's disease, alcoholism and dissipation.

Symptoms are not always apparent and vary with the different arteries involved. Palpation reveals a hard, beady condition of the vessel's wall.

The patient complains of dizziness, and pseudoapoplectic attacks are frequent. Sclerosis of the cerebral arteries causes attacks of unconsciousness as in cerebral hemorrhage. Coronary sclerosis causes angina and renal arteriosclerosis causes interstitial nephritis.

Treatment: Observe the diet, keep the liver, kidneys and skin active, avoid too strenuous exercise, insist on temperate habits, and give potassium iodid and nitroglycerin in small doses indefinitely.

INGROWING NAILS; ETIOLOGY AND TREATMENT *

FRANK S. LOWER, M.D.

CHICAGO

Much has been written in this country and abroad on the subject of ingrowing nails, but inasmuch as the writers have limited themselves to the description of the treatment, I deem it necessary to say an additional word on the etiology of ingrowing nails. I shall touch, furthermore, on the pathology of this condition, which is, in my estimation, worthy of your attention.

The term "ingrowing nails" has been, and is now, used to depict a condition of ulceration occurring at the margins of the nails. In 95 per cent. of all cases I have recorded, the condition is due to other etiologic factors than the mere turning in or malformation of the nail *per se*. The percentage of cases, therefore, due to a congenital idiosyncrasy is proportionately very small. It will be of interest to show you that in 60 per cent. of all cases met with in our daily practice, the disturbance arises from an improper cutting of the nail by the unskilled hand of the patient himself. Feeling some sensitiveness at the edge of the nail, or for economical reasons — fearing that a nail corner may destroy a portion of the oftentimes expensive stocking — the patient will try his dexterity and cut off the nail diagonally, leaving a sharp angle of nail prodding into the toe as the soft parts are crowded against it in walking. In case this abuse fails to set up an inflammation or to incise into the soft parts, thus providing an entrance for infection, the flesh will now be pushed up, by walking and by pressure of the shoe, into the space previously and normally occupied by the nail. As the nail continues to grow and proliferate outward, this angular portion will, of course, exert a pressure on that sensitive — or "quick" — portion of the toe. To relieve this, the patient quickly cuts away some more nail.

This process continues until inflammation, suppuration and ulceration result. Eventually a large, fleshy mass is forced over the nail, and with the exuberant granulations and pus formation he has to all intents and purposes an ingrowing nail.

I further find in 35 per cent. of the cases that improperly fitting footwear (stockings as well as shoes) actually forces or holds the edge of the nail into the soft parts. In this connection I may recall to your

* Read at a meeting of the North Shore Branch, Chicago Medical Society, Jan. 2, 1912.

memories the toothpick-toed shoes of about ten years ago and the pumps of to-day.

The remaining 5 per cent. of the cases are the real ingrowing nails. The etiology is either a congenital idiosyncrasy wherein the nails of all the fingers or toes, or both, have a tendency to curl laterally, or on account of some crushing injury to the matrix which causes a disturbance in the normal reproduction of the nail, and which may result in an hypertrophy developing at any angle or a growing in, up or down, into the toes.

The treatment has been more or less fully covered in this country by Howland,¹ Webb,² Noble,³ Keller,⁴ Jennings⁵ and Breakstone;⁶ in Canada by McKenzie;⁷ abroad by Ittameier,⁸ Reclus,⁹ Lehmann,¹⁰ Schwartz,¹¹ Pasquereau.¹² I shall, therefore, briefly describe the method of treatment I pursue and which has given me splendid results; by this last meaning a permanent cure.

In the first two categories, or those caused by abuse, which represent about 95 per cent. of the cases, I remove sufficient of the nail to relieve the irritation. For this purpose I use a dental chisel that I have modified, having it sharpened on both sides. With this instrument, after thoroughly cleansing the part and rendering it as aseptic as possible, I split the nail clear back to the base and lift out the irritating portion. This procedure seldom makes any additional wound. I then wash out the part with hydrogen peroxid and dry with absorbent cotton. Next I drop in a solution of equal parts of the tinctures of aconite, iodine and belladonna. Aside from the penetrating, antiseptic effect of the iodine, the aconite and belladonna hasten the reduction of inflammation and its concomitant symptoms.

The space is then packed very loosely with aseptic gauze and bandaged with the same material. I usually give the patient an antiseptic solution with instructions to leave the bandage as placed and saturate the entire dressing with the solution once an hour or as nearly that as possible; he is also instructed to keep the foot elevated. I have tried nearly all the solutions recommended for wet dressings, but have found one composed of about 1:3,000 or 1:4,000 formaldehyd the most satisfactory in these

1. Howland, E. D.: The Treatment of Ingrowing Toe-Nails, *Ill. Med. Bull.*, Chicago, 1906-7, vii, 151-153.

2. Webb, G. B.: Treatment of Ingrowing Toe-Nail, *Jour. Am. Med. Assn.*, Chicago, 1907, xlviii, 944.

3. Noble, R. J.: The Treatment of Ingrowing Toe-Nails, *Internat. Jour. Surg.*, New York, 1908, xxi, 314.

4. Keller: A New Operation for Ingrowing Toe-Nail, *New York Med. Jour.*, 1909, lxxxix, 387.

5. Jennings, J. E.: Operation for Ingrowing Toe-Nail, *Am. Jour. Surg.*, New York, 1909, xxiii, 163.

6. Breakstone, B. H.: Ingrown Toe-Nails, *Am. Jour. Clin. Med.*, 1911, xvii, 960.

7. McKenzie, B. E.: Ingrowing Nail and Hammer Toe, *Can. Jour. Med. and Surg.*, Toronto, 1907.

8. Ittameier, C.: Ein Instrument zur partiellen Exzision des eingewachsenen Nagels, *München. med. Wchnschr.*, 1907, liv, 1640.

9. Reclus: L'ongle incarné et l'exostose sous-unguéale, *Rev. gén. de Clin. et de Thérap.*, Paris, 1908, xxii, 17-19.

10. Lehmann: Die Behandlung des eingewachsenen Nagels mit Eisenchlorid, *Deutsch. Mil. ärztl. Ztschr.*, Berlin, 1908, xxxvi, 918.

11. Schwartz, A.: Le traitement chirurgical de l'ongle incarné, *Progrès Méd.*, Paris, 1908, 3s., xxiv, 842.

12. Pasquereau: Traitement de l'ongle incarné, *Gaz. Méd. de Nantes*, 1909, 2s., xxvii, 195.

cases. In this strength it is actively antiseptic without being irritant; it is a deodorant and has a hardening effect on the tissues. The toe is redressed every day as long as there is suppuration. When this ceases, I cauterize with silver nitrate or sesquichlorid of iron, pack in a 20 per cent. salicylic ointment and seal it in with cotton and flexible collodion. This is left in for eight or ten days and removed, when the tags and rough cuticle will have become exfoliated and will peel out like a cast.

The space is kept packed with cotton until the nail has grown out properly, when the patient is instructed to cut the nails square across the ends, parallel to the ends of the toes.

While I always instruct my patients as to the kind and shape of shoe they should wear, this is simply to appease my conscience, as few of them will change their style of shoe for so small a factor as comfort!

In the third class, the actively and chronically (or true) ingrowing nails, the only radical treatment is that of thoroughly removing the entire nail, matrix and all, so that no new nail will grow. The principal care to be exercised is to destroy the matrix entirely, as any particle remaining is apt to give rise to a spur of nail growing out in any direction and causing as much trouble as it originally did.

I experience considerable difficulty in persuading patients to submit to this last named operation, as it necessarily disables them for from four to six weeks, while granulation takes place. But it is a permanent cure.

For this operation I am now using a method suggested to me by Dr. Jacob Frank. By this method, after the patient has been prepared in the usual way, a general anesthetic is given. While this operation can readily be performed under local anesthesia, I prefer to have the patient asleep, as also does Dr. Frank.

An Esmarch is put on around the base of the toe to render the field as bloodless as possible. The nail is now split its entire length and dissected or pulled off with strong artery forceps. A horseshoe-shaped incision is made through the skin down to the cellular tissue, starting a little away from the upper, inner free margin of the nail, carried down the side, across the base and up the outer side of the nail, parallel with and about 1 cm. from the lateral margins and 2 cm. distal to the junction of the base of the nail and the cuticle.

This flap is lifted up and turned back over the end of the toe. The next step is to cut down through the cellular tissue, following the line of the first incision, going clear down to the periosteum. The matrix is then carefully, very carefully, dissected away, the soft parts laid back and sutured in place with catgut. A moist occlusive dressing of 4 per cent. boric acid is put on loosely and left on for twenty-four hours, when a dressing of compound tincture of benzoin is applied and left until it loosens up from the bottom.

If you have a clean case to start with and your asepsis has been complete, the patient should be getting about in two or three weeks. This is cutting the usual convalescence, following other similar methods, in half.

In my considerable experience as a chiropodist, before I became a physician, I have seen dozens of nails that had been operated on by surgeons and with the exception of the very few who had removed the entire matrix, their results were bad.

So I repeat in closing, get all of the matrix and you permanently cure this painfully annoying condition; leave any portion of it, and you have not done much for your patient.

DIAGNOSTIC AND THERAPEUTIC USES OF GONOCOCCUS VACCINE (BACTERIN) AND ANTIGONO- COCCIC SERUM *

V. D. LESPINASSE, M.D.
CHICAGO

At the onset one must draw a sharp line of distinction between gonorrheal vaccine and antigonococcic serum. They are entirely different substances. The vaccine produces its therapeutic effects by producing active immunity and its dosage is very important, as large doses are toxic and do harm whereas the serum acts by producing a passive immunity and its dose is simply a question of giving enough antibodies to neutralize the toxins produced by the disease in the particular patient under treatment.

The vaccine is used in two ways: first, as a diagnostic agent; second, as a therapeutic agent.

AS A DIAGNOSTIC AGENT

Its first use as a diagnostic agent is in the differential diagnosis of arthritis. The symptoms of a positive reaction are increased temperature and aggravation of all the clinical symptoms, as pain in the joints, increased redness around the joints and a generally worse clinical picture (Irons).

The stick reaction or local reaction at the site of injection is of some importance. In a person free from gonorrheal infection there is absolutely no reaction at the site of injection of the bacterin. In a gonorrheic, however, there is quite a reaction, as shown by redness, swelling, tenderness and pain.

To Diagnose Cure.—Second only in importance to a quick, certain and painless method for curing a gonorrhea is a rapid and infallible method of diagnosing the absence of the gonococcus from a patient after an attack of the disease. In gonorrheal bacterin we have an agent that has been of great value to me in diagnosing the cure. Mention was made of this method in a paper I read before a joint meeting of the Chicago Urological Society and the Chicago Medical Society some time ago, but it has not yet been published.

* Read before the joint meeting of the Englewood Branch and Stock Yards Branch of the Chicago Medical Society, Thursday, Dec. 7, 1911.

Before using this method of diagnosing a cure I experimented as follows:

Smears were made from cases showing only a slight discharge and the gonococcus found, 500,000,000 vaccine was injected, and in every instance the gonococci increased in number in the smears, and usually the stick phenomena were present.

In other patients with a slight discharge, when the gonococci was not found after being searched for every day for from five to twelve days, these patients were injected with 500,000,000 vaccine. This sometimes produced gonococci in the discharge and sometimes not.

The cases that did not show gonococci in a week after this injection were injected again and still remaining gonococci-free as far as the smears were concerned and showing no stick phenomena, were declared gonorrhea-free. I have used this reaction in my private practice and I do not know of an instance where a man has been negative to the test and subsequently infected his wife. When you are called on to answer the question: "Doctor, am I all right, can I get married?" use all the old well-known methods and then for good measure give your patient 500,000,000 gonococcus bacterin and a dozen slides. Have him smear before every urination and then next morning report at the office with the smears. These are examined. Continue this way for two to five days and if no gonococci are found he is safe.

AS A THERAPEUTIC AGENT

In the acute cases very few men report favorable results; as the cases become chronic, the results of vaccine treatment become progressively better.

The same applies to the acute complications and the chronic complications. The dosage of the bacterin is very important and should be accurately adapted to each patient. In the acute cases dosage as low as a million repeated every day have been given with fair results.

In the less acute cases five and ten millions to start with and increase from one to five millions at each dose, giving the doses every five to seven days. In the chronic cases commence at twenty millions and increase by five to ten millions, giving injections about one week apart.

The bacteriology of gonorrhea by many has been considered a closed book, but every day the fact is being brought out and emphasized that there are other bacteria in gonorrhea beside the gonococcus. To try and reach these cases, mixed vaccines are now used, also the Schafer vaccines; and lately I have been using the crude pus diluted and killed at 60 C. for fifteen minutes and injecting it back into each patient. As far as results are concerned with these methods I cannot state anything definite as yet.

SUMMARY

In acute gonorrhea vaccine has little if any place and is liable to do real harm. In acute epididymitis a single dose of 10,000,000 has cured several cases in two days.

In chronic gonorrhea, either anterior or posterior, the results are variable; some obtain a very rapid cure, others are very prolonged.

In prostatitis and vesiculitis the results are uncertain; some receive great benefit, others none at all. A few have been benefited up to a certain point and remain thus indefinitely.

ANTIGONOCOCCIC SERUM

Antigonococcic serum was introduced by Drs. Torrey and Rodgers. It is prepared by giving a horse an injection of dead gonococci once a week for four weeks and then the injection of live gonococci once a week for five weeks. Their paper reporting their results appeared in *The Journal A. M. A.*, Sept. 14, 1907. These observers then turned this serum over to the department of experimental medicine of Parke, Davis & Co., and this institution after two years of clinical experimentation conclusively confirmed the results obtained by Torrey and Rodgers.

The present status of antigenococcic serum is exactly as Rodgers and Torrey determined; viz., it is of no value in acute gonorrhea, very seldom in subacute gonorrhea, once in a while in chronic gonorrhea and of paramount value in all the conditions due to gonococcic toxemia, the commonest of which is the so-called gonorrheal rheumatism. The serum is bactericidal but to a very slight extent, and hence of little use in actually killing gonococci.

Rodgers divided gonorrheal rheumatism into three groups: acute, subacute and chronic. The acute cases get well of themselves very largely, but usually very promptly with serum. The subacute react to the serum very well, but not quite so quickly as the acute. Of the real chronic cases, some react and some do not. Dosage: From 2 c.c. to 6 c.c. should be given at a dose and the dose repeated every day, every second day or once a week. Personally I believe with Herbst that at least 4 c.c. should be given at a dose.

Complications: There is practically only one; viz., serum disease. It is unfortunate that now they are making the gonorrhea serum from horses.

Serums for the different diseases should be made from different animals to avoid anaphylaxis; viz., horse for diphtheria, goat for gonorrhea, and so on; so if the necessity ever arises for a second administration of serum for a different disease, your patient will not be sensitized to that particular serum.

The treatment of the urticaria is a very trying feature of serum therapy. After all the ordinary means of treatment have been exhausted, apply collodion to the wheals and the itching stops as soon as the collodion contracts. This was discovered by Dr. H. Boettcher as the result of personal experience. I can testify from personal experience with serum disease and its use in a few cases that it is a very efficient method of relieving the itching. Calcium lactate or chlorid internally is of stated value as a prophylactic.

Causes of failure: (1) persistence of the original focus of gonococci; (2) the growth of gonococci in the joints themselves; (3) insufficient dosage.

CONCLUSIONS

Gonorrheal bacterin is of great value as a diagnostic agent; as a therapeutic agent its action is very favorable in some cases; in others there is no change in the patient's condition.

Gonorrhea serum is of very little value for the local lesions of gonorrhea, but for the gonorrheal toxemic lesions its action is excellent.

ON THE TREATMENT OF FRACTURES WITH LANE'S PLATES *

WILLARD BARTLETT, M.D.

ST. LOUIS

My earliest impressions of fractures were gained as a boy in a town not far from the city in which we are so handsomely entertained to-day. For forty years my father carried on a practice in which emergency surgery played no small rôle. Is it then strange that I became impressed early in life by the uncertainties and worries incident to the treatment of fractures in pre-Roentgen days?

In spite of the numbers of cases treated by different surgeons and the exclusion of the field, it must be confessed that the treatment of fractures has to a certain extent been unsatisfactory and productive of dissatisfaction and even malpractice suits. We occasionally see people shockingly crippled as a result of fractures received long ago, and not properly treated under the old methods of surgery. We would probably be astonished to see the results of some *x*-ray examinations of our own old patients in whom we thought we had obtained satisfactory results. We are only thankful that the percentage of cures under these old methods was sufficiently large to hold the faith of the patients and to encourage further development of the treatment of such injuries.

There has been such rapid progress in the development of the surgical treatment of injured soft tissues, that now modern surgery takes no chances with them. The principle of asepsis has made possible the repair of almost every organ and nearly all the tissues of the body. The lungs, the heart and the blood-vessels have been repaired with excellent results; as also have the hollow abdominal viscera, the nerves and other tissues.

Since the principle of asepsis has constituted the foundation on which modern surgery has been built with such wonderful results in operations on all the soft tissues of the body, it seems to be the line indicated for further development in the treatment of fractures. We know of course that there is only a chemical difference between these soft tissues and the

* Read at Springfield, Ill., Nov. 16, 1911, at a dinner tendered the surgeons of the Illinois Traction Company by Chief Surgeon H. M. Bascom, M.D.

body frame-work or bony structure. We know also that the bones present less resistance to infection than do some other tissues; therefore in handling them, greater skill and care must be exercised in maintaining a perfect asepsis. Under such conditions more operating-room experimentation would seem justified now than heretofore, especially when the surgeon of to-day is expected to accord the same measure of anatomic certainty to broken bones, as is taken for granted in connection with other tissues. Even to develop that surgical treatment which has already reached a high degree of specialization, it is necessary to develop the surgical treatment of the bones, since the bones constitute the skeletal frame of the body and enclose the three vital organs.

There are two general principles governing operations on fractures, a consideration of the systemic risk and a consideration of the local risk. It would of course be an act of folly to operate for the purpose of establishing the proper function of some part of the body, thereby unduly risking the life of the individual. Consequently, general health must be considered very carefully in operations for fracture, to be certain that the patient is a good operative risk. As to local risk incurred, there are three very important considerations.

It is positively necessary in the first place that the surgeon who desires to make a success in the operative treatment of fractures, be a skilled mechanic.

Secondly, he must have the proper mechanical equipment for this work, instruments not found in the ordinary hospital outfit. In the early operations which the writer performed considerable mechanical difficulty was experienced in getting into line and keeping in place two parts of a broken long bone while securing them together. In order to meet this difficulty, it was necessary to devise a traction instrument, as traction secured through manual efforts proved both inefficient and uncertain; and also a powerful clamp. This was found to be necessary for the special purpose of lining up the fractured long bone and then holding it in position when properly apposed. The tractor consists of a long screw and a triangular frame almost two feet in length which is bolted to the foot of the operating table in a horizontal position, if the fracture be one involving a bone of the leg. By turning the screw any amount of tractive force can be secured by a cord attached to the end of the screw and the patient's foot. For a fracture near the ankle, two towels are looped around the foot and the cord attached to each. But if the fracture be high enough, a very convenient way of getting traction is to fasten a screw eye to the heel of an ordinary high shoe and attach the cord to this. This traction instrument is a contrivance which any blacksmith can make and is to be recommended for the armamentarium of hospitals where dependence is now placed on manual tractive efforts.

The special instruments which Mr. Lane has devised for use in each part may be placed in position or removed; the clear view of the fracture line at all times; the certainty with which fragments of any shape and size are driven to a common axial center and held until perma-

nently secured. This instrument makes the handling of all fracture cases where the bone ends tend to push out through the wound, much simpler.

The special instruments which Mr. Lane has devised for use in fracture cases are undoubtedly well known. They are a long handled bone holding instrument, elevators, drills and screw drivers. These instruments not only give great leverage but by their length make it unnecessary for a hand to come in contact with the tissues.

This leads me to a discussion of the third important consideration as to the local risk in the treatment of fractures, namely, the asepsis — an asepsis which must be more rigid than any which has been used heretofore in general surgical work. No one has a right to attempt operations for fractures who is not prepared to prevent any exposure of the skin; to keep his gloved hands from ever coming in contact with the tissues or with those portions of the instruments which do not come in contact with the tissues; nor are needles, sutures or ligatures to be handled with other than sterile instruments at any time.

While a large number of proposals for the open treatment of fractures have been advanced, I find myself able to treat every case presented by one of the three following methods: (1) the "metal nail" method, for the head of the humerus; (2) wiring for the patella; (3) elsewhere in the long pipe bones and in the clavicle, the writer has discarded all other methods and now uses only the Lane plate method.

My experience leads me to consider an open operation justifiable in only four conditions: (1) It should be used when one is unable to get the fragments in place by ordinary methods or is unable to keep them held in the proper position. (2) Operations for fracture are especially useful in old cases of non-union. (3) It is of course desirable in all fresh widely open fractures and possibly (4) in chronically infected cases in which the bones lie bare. All compound wounds whether suppurating or not are to be packed and allowed to granulate. Generally speaking, the patient must always be a good surgical risk.

The writer is fortunate enough to have operated on fifty-eight cases in which the Lane plate was used. It was impossible to trace twenty-six from the time they left the hospital and one is too recent to be of value. Thus we have for final study thirty-one end-results. A solid bony union was obtained in twenty-seven of these cases; non-union resulted twice, both of which cases were fractures of the humerus; and two patients died.

As to the condition of the wound of the fifty-eight Lane plate cases, forty-seven wounds healed by first intention; six were infected; two were left open to granulate; and in three instances the history makes no mention of this feature. Only three of the above infections were in clean cases. The local risk, therefore, has been very slight.

Eleven plates were removed, five of them being in simple fractures. Of these, one had compressed the musculospinal nerve; one occasioned a refracture and one was infected at the time of the operation; but as to indications for the removal of the other two, I am not certain, as I did not take them out.

Of the fifty-eight Lane plate cases, there were nine compound fractures. Two of these were suppurating when operated on; three became infected and suppurred after the operation; three healed by first intention; one packed wound granulated up, covering the plate. Bony union was known to have occurred in five, i. e., 55 per cent. An amputation was done in one instance seven weeks after a "Sick" plate had been introduced into a suppurating wound; the result is unknown in three instances. The plate is known to have been removed in six of the compound cases.

The following gives an idea of the number of Lane plate operations performed on the different bones of the body: On the femur there were twelve; on the humerus, thirteen; on the clavicle, four; on the fibula, three; on the tibia, nine; on fractures involving both tibia and fibula, nine; on the olecranon, three; on the ulna, three; on the radius, one; on those involving both the radius and ulna, one. The greater number of failures occurred in operations on the tibia and the humerus. This is of course small, as there was 87 per cent. of perfect bony unions among the thirty-one cases of Lane plate operations where the final results could be traced and 81 per cent. of all the Lane plate operations performed were known to heal by first intention.

The importance of the after-care in an open operation for fracture is only slightly less important than the operation itself. A case after operation should be just as carefully splinted as one not operated on. That this is necessary, however, does not prevent convalescence being often greatly shortened when operative treatment has been employed.

The postoperative treatment after application of the Lane plate to the long pipe bones of the lower extremity is as follows: The patient is placed in a plaster cast and goes about on crutches at the expiration of one week, the sound member wearing a shoe, the sole of which is sufficiently thick, so that the injured cannot touch the ground.

1. The number of plates in which secondary removal was necessitated, forces me to the conclusion that smaller and lighter plates must be used if a tissue tolerance to them is to be cultivated. However, removal of a plate is a matter of comparatively slight significance when restoration of anatomic and functional perfection are considered. I have not had to remove wires, nails or pus where aseptic healing had been effected.

2. Nothing short of absolutely perfect approximation justifies an open operation for fracture. By this is meant a union so exact that no fracture line can be seen by spectators a few feet away from the field.

3. An ideal result is possible even when Lane's plates are used in the presence of pus, as shown by one case.

4. No doubt some surgeons have gone to both extremes in the consideration of this matter. However this may be, my results make me think we shall eventually see every skilled operator making routine use of it in carefully selected cases.

A DEMONSTRATION OF THE METHOD OF MANUFACTURING SERA AND VACCINES *

PRENTISS MCKENZIE

Of the H. K. Mulford Co., 1225 Wabash Ave., Chicago

I have been invited by your president to describe to you the production of diphtheria antitoxin and other biologic products, using the lantern to illustrate the same.

I propose to give you the process adopted for manufacturing the so-called concentrated antitoxin, which differs from the antitoxic serum first placed on the market in being a solution of the antitoxin-bearing globulin in normal salt solution, the other constituents of the serum being omitted, having been eliminated by the process.

As you know, diphtheria antitoxin is produced by immunizing horses against diphtheria toxin and using the serum from such horses for the production of diphtheria antitoxin. The diphtheria antitoxin in some unknown way is combined with pseudo-globulin which carries with it almost all the antitoxin. In the preparation of concentrated diphtheria antitoxin, the globulins are first precipitated from the antitoxic serum by the addition of saturated ammonium sulphate solution and separated by filtration from the serum-albumin and other inert substances. The pseudo-globulin (containing the antitoxin) is then separated from the euglobulin by means of saturated sodium chlorid solution in which the former dissolves. From this salt solution the pseudo-globulin (antitoxic globulin) is precipitated by acetic acid. The purified antitoxic globulin is then collected on a filter, dried between filter papers, placed in parchment dialyzers and dialyzed in running water to free it from inorganic matter.

When placed in the dialyzers, the antitoxic globulin is a white waxy mass, and is dissolved during the process of dialysis. The resultant clear fluid is passed through several layers of filter paper and then passed twice through Berkefeld filters. This fluid is standardized by the official process adopted by the United States Government.

Composition of Diphtheria Antitoxin.—The analysis of diphtheria antitoxin shows that its principal constituents are:

(a) Proteids.

1. Fibrinoglobulin formed from the fibrinogen during coagulation.
2. Euglobulin.
3. Pseudo-globulin, which carries with it almost all the antitoxin.
4. Serum-albumin.
5. Nucleo-proteids.

(b) Inorganic matter.

In addition to sodium chlorid, the serum contains minute quantities of phosphates and salts of calcium, potassium, and other metals.

* Read before the Chicago Medical Society, Dec. 6, 1911.

Advantages of Concentrated Diphtheria Antitoxin.—The advantages claimed for the concentrated diphtheria antitoxin in comparison with the antitoxic serum formerly employed as antitoxin are:

1. Concentration. By concentration, the bulk of the dose is greatly reduced, causing less pain when injected.

2. Purification. It is believed that by eliminating all the inert organic and inorganic matter and using only the antitoxin-bearing pseudo-globulin, the tendency to cause urticaria and other symptoms of so-called serum sickness is materially lessened.

THE UNITED STATES REGULATIONS FOR THE STANDARDIZATION OF DIPHTHERIA ANTITOXIN

The hygienic laboratory of the U. S. Public Health and Marine-Hospital Service issues at intervals small quantities of a test antitoxin. The number of standard units contained in each cubic centimeter of this antitoxin is definitely stated. This standard is used for gauging the strength of toxin which has been set aside for use in testing. The amount of this test toxin, which, when mixed with exactly one unit of standard antitoxin, will kill a guinea-pig of 250 grams' weight on the fourth day, is called the test dose. The test dose of this special toxin is measured into a special injecting syringe; the antitoxin is next measured into the syringe, the mixture is shaken and allowed to stand for at least fifteen minutes. Both toxin and antitoxin have been diluted so that the desired quantity of each is represented by 1 c.c. At the end of the period the 2 c.c. of the mixture is injected subcutaneously into the guinea-pig, then 2 c.c. of normal saline solution is put into the syringe to wash it out, and this is also injected without removing the needle. This method renders the test extremely accurate. In the calculation of the amount of antitoxin to be used for the test, the number of units per cubic centimeter is taken as a basis. For instance, suppose we wish to test a certain antitoxin for 400 units. This means each cubic centimeter contains 400 units, or in 1-400 of the c.c. there would be one unit.

This then is the amount of this antitoxin to be mixed with the test dose of toxin. Suppose the pig should live for four days after having received this mixture, another pig would receive 1-450 c.c. of the antitoxin; or, if the first pig had died on or before the fourth day, the second pig would receive 1-350 c.c. This scheme is carried out until the smallest quantity of antitoxin which will save the life of the guinea-pig for four days is determined. The number of times that fraction is contained in "one" will equal the unit value of that antitoxin per cubic centimeter.

Details of the Process for Preparing Antitoxin.—In propagating serum the first step is the selection of pure cultures of the diphtheria bacilli. The next step is the cultivation of the specific toxin from the organisms; this is obtained by inoculating large flasks of peptone bouillon and growing the same from five to seven days in a separate incubating room. After the growth is perfected, trikresol is added to kill the bacilli and the toxin is separated by filtration.

Before it is used on the horse the toxin is standardized by injecting graduated quantities into guinea-pigs of known body weight. In this way the minimum lethal dose is established, this being the smallest amount of toxin which will prove fatal to the guinea-pig within a definite time.

In beginning the injections the horse is given the minimum lethal dose for the guinea-pig, which is gradually increased every four or six days, for a period of six months. During this time the temperature and general health of the horse is carefully watched; furthermore, before any work is started on the animal it is carefully isolated and kept under the observation of a skilled veterinarian for the proper period of time.

Before the process of total immunity of the horse is discontinued a trial bleeding is made and the definite strength of its blood-serum determined.

The horse is used for the production of serum for the reason that it is comparatively free from disease, enjoys a high degree of natural immunity to diphtheria, and yields a fine quality of serum.

The horse must be robust and in perfect health. Each animal is first injected with mallein, which will reveal even the microscopic presence of glanders, and is kept constantly immunized against tetanus with tetanus antitoxin. The animals are kept in separate stalls, provided with individual water-supply, ventilation and drainage.

In bleeding the horse the same care is exercised that would be observed in surgical operations in any modern hospital. This is done in a separate building from the stables; the floor and walls are of cement and slate, and the room is thoroughly disinfected before the operation. Before the horse is brought to the operating room it is first led to an adjoining room, where it is prepared for the operation by thoroughly scrubbing the site of operation with an antiseptic, then covered with a sterile sheet which has been soaked in a bichlorid solution. The veterinary surgeon and his assistants, who draw the serum, wear clothing which has been sterilized. Everything connected with the operation, including the instruments, vessels and apparatus is thoroughly sterilized by the most modern methods.

A cannula attached to a sterilized rubber tube is introduced into the jugular vein of the horse, and the blood collected in a sterile parchment-covered jar. The blood is then transferred to the blood room, to allow the serum containing the antitoxin to separate from the clot.

After the serum separates it is transferred to a sterile bottle and a small quantity (0.4 of 1 per cent.) of trikresol is added to prevent the possibility of contamination after it leaves the laboratory. The addition of the antiseptic causes some cloudiness and in many sera this precipitation continues to a limited degree after filtration; this precipitation, however, does not decrease the antitoxic value of the serum.

ANTIPNEUMOCOCCIC SERUM

This serum is produced by the process of first injecting killed pneumococci of many different strains taken from a large number of persons suffering with pneumonia, and later live cultures of the pneumococci.

The same precautions are of course taken in the preparation of this as in the antitoxin for diphtheria.

ANTISTREPTOCOCCIC SERUM

Anti-streptococcic serum is prepared by immunizing horses against the streptococcus. A large number of strains are employed for that purpose, and the resulting serum is consequently polyvalent in character. When employed in suitable cases and in sufficiently large doses it is very effective. According to Dr. Barton C. Hirst of Philadelphia, who has had much experience in the use of this product, no less than 300 c.c. should be given during twenty-four hours (60 to 80 c.c. administered every four hours for twenty-four to thirty hours). In the treatment of malignant forms of erysipelas and in puerperal septicemia the results have in many instances been remarkable. It is believed by some that the effect of the treatment may be augmented by using strepto-bacterin at the same time. The injection of bacterin increases the amount of the antibodies in the patient's blood and increases the patient's resistance to the disease.

In its early history there was a difference of opinion regarding the protective part of antistreptococcic serum. This was mainly due to the fact that a polyvalent serum was not employed. Streptococcus is not a single but a generic name for a large and heterogeneous class the members of which are capable of producing the most varied forms of lesions.

The protective value of this serum has recently been strikingly confirmed by laboratory investigations carried on by Drs. George H. Weaver and Ruth Tunnickliff of the Memorial Institute for Infectious Diseases, Chicago. They found a marked difference in the protective value of different brands of antistreptococcic sera and these investigators demonstrated by experiments on 250 and 290 gram guinea-pigs that the H. K. Mulford Company's polyvalent serum afforded complete protection against one minimum lethal dose of the culture (streptococcus) in doses of 1, 2 and 6 c.c.

ANTIMENINGITIS SERUM

This serum is prepared in accordance with methods worked out by Dr. Flexner of the Rockefeller Institute after five years of exhaustive experimental work, and extensive clinical trial.

In the preparation of this serum the horses are immunized with injections of meningococci, alternated with injections of live cultures.

The injections are given alternately every few days, for a few weeks, the killed organisms are replaced by the living, the number of which is steadily increased. The injections are given as before, alternating with injections of autolyzed cultures.

After this process has been carried on for six months, the serum of the horse is tested and if it shows bacteriotropic powers it is considered sufficiently strong to be of value for therapeutic purposes.

The finished serum contains agglutinins specific for the meningococcus and also co-agglutinins for pseudo-meningococci.

It contains specific amboceptors, which is shown by the test of deviation of complement. This is a very positive test, as even the most closely related organisms give negative results.

ANTITETANIC SERUM

This serum was first produced by Kitasato. The tetanus and diphtheria toxins are both soluble and the antitetanic serum is produced in very much the same way as antidiphtheritic serum.

An important consideration in its employment is its use early in suspected wounds, and in sufficiently large doses to neutralize the enormous amount of toxin elaborated by the tetanus germ.

The majority of cases require from 15,000 to 50,000 units of the serum, and the employment of it should be supplemented by open treatment, and any other measures which individual conditions warrant.

BACTERIAL THERAPY

This is fundamentally based on our knowledge of immunity. The subject of immunity is, however, too complex to permit us to go into it in any but the briefest way.

Metchnikoff's theory of phagocytosis is well known to you and he was the first to advance the idea that certain cells normally possess the power not only of ingesting but of digesting and destroying foreign particles and fragments of dead tissues.

There are three different orders of antibodies. The first order includes antitoxins, antivenins, antiferments, etc.

The second order includes precipitins and agglutinins.

The third order includes bacteriolysins, bactericidins, cytolsins, etc.

To these must be added the opsonins, which probably belong to the third order.

The kind of antibody depends on the antigen injected. An antigen or antigenous substance is one which is able to cause the formation of an antibody. For example, when a toxin is used as an antigen the corresponding antibody is an antitoxin.

Of these antibodies, Sir E. A. Wright regards the opsonins as the most important. The word "opsonin," from the Greek verb *opsono*, "I prepare food for," alludes to its power of preparing the disease-producing bacteria for ingestion and destruction by the phagocytes.

Of late, a new factor has come into this interesting subject. In studying the defenses of the body against infecting organisms, the tendency in the past has been to devote attention almost exclusively to the specific antibodies of the blood-serum and to the phagocytes. Only recently it has been suggested that certain definite chemical substances produced within the body take part in these defenses. For example, it has been shown by Noguchi that the activity of certain substances expressed or extracted from the leukocytes depends on fatty acids or their alkaline soaps. Lamar has shown that highly dilute solutions of the alkaline oleates produce certain changes in the pathogenic bacteria which

render them more subject to destruction. When soaped pneumococci are treated with the serum of a person suffering with pneumonia, they are rapidly dissolved. This action is inhibited or hindered by the protein of the serum. Lamar has found that by mixing soaps and boric acid with the serum, in suitable proportions, this inhibition by the protein is prevented. Furthermore, when animals are infected with pneumococci, and this is followed by an injection of a mixture of soap, boric acid and immune serum — namely, the serum of a person suffering with pneumonia, the infection can be prevented.

Sajous' Internal Secretions Theory. Wright concluded in 1904 the "protective substances which were evolved in the cure of disease and that were present in considerable quantities in the blood were to be regarded as produced by internal secretions." He added, however, that "he did not know where they were produced in the body." Sajous had one year earlier, in his work on the "Internal Secretions," claimed that the thyroid, adrenal and pancreas, were the source of internal secretions known as antitoxic, and that it was these secretions which endowed the blood of Metchnikoff's phagocytes with their immunizing power. He also claimed (1907) that Wright's opsonin was the thyroid secretion. The researches of Fassin in Belgium, and of Stepanoff and Marbe at the Pasteur Institute, favor Sajous' observations.

Sajous' theory is that bacterial vaccines excite the centers that govern the above glands, and by thus increasing the secretory activity of the latter, cause the appearance in the blood of the protective substances to which Wright refers.

All of this goes to indicate that, as already stated, there are chemical substances in the blood serum which take part in the immunity, in addition to the antibodies mentioned.

If living pneumococci were injected into the tissues of a person suffering with pneumonia, it would serve to increase the infection. While it is true that it would increase the formation of antibodies, yet at the same time, it would increase the amount of living disease germs in the body and make the patient worse.

Wright says that the principle underlying vaccine therapy consists of the exploitation of the healthy tissues in favor of the diseased tissues. For example, when a person is suffering with pneumonia, the tissue cells of the lungs may be in condition where they are no longer capable of responding to the stimulation of the pneumococci, and therefore are not able to produce antibodies. By injecting a dose of pneumo-bacterin, consisting of the killed pneumococci, in some other part of the body where the tissues are in healthy condition, the body cells respond to the stimulation and form antibodies which, carried in the circulation of the blood and lymph, are conveyed to the infected area, there to produce their action on the pathogenic bacteria causing the disease.

One of the best illustrations of the remarkable value of bacterial vaccines is the history of vaccination against typhoid fever as carried on in the armies of the world. Much attention was attracted by the remark-

able results obtained in the British Army during the Boer War. Of greater interest to us is the history of vaccination against typhoid fever in our own army during the recent mobilization of the troops of the Mexican border.

President Taft, in an address before the Philadelphia Medical Club, May 14, 1911, in referring to the health of the troops mobilized on the Mexican frontier, said:

Two months after the mobilization, with the modern health regulations and by the use of vaccine against typhoid, not one case of typhoid fever has appeared in the entire force, except that of one teamster, who was not vaccinated. As I have this directly from the War Office I can assert it as one more instance for the marvelous efficiency of recent medical discoveries and practice.

I need not recall the dreadful record from typhoid fever in the camps established during the Spanish-American War. The percentage of typhoid fever was so high that it is hard to believe; of 120,000 men there were 20,000 cases, with a case mortality of 7 per cent.

So successful has it proved to be that the vaccine is now administered to all recruits under 35 years of age (General Orders No. 76, War Department, Washington, June 9, 1911).

The question of mixed infections is exciting much interest at the present time. It has been found that in a large majority of cases more than one kind of pathogenic bacteria take part in producing the complex of symptoms. This phase of the subject is now undergoing investigation by experts in various parts of the world and bacterial therapy is being modified in accordance with the findings. This has resulted in the production of so-called mixed bacterins which include killed bacteria of various kinds to meet the requirements due to mixed infections. Thus we have Neisser-bacterin mixed, pneumo-bacterin mixed, typho-bacterin mixed, etc. To this list others will doubtless be added as the development of the knowledge enables the manufacturers to produce the proper mixtures.

Special studies are now being made by experts in the east to ascertain the nature of mixed infection in tubercular diseases, and probably a method will soon be developed for treating tubercle mixed infections with a mixed bacterin.

TUBERCULIN

Dr. Koch in 1890 announced the discovery of a substance in cultures of the tubercle bacillus, which caused a specific reaction in persons suffering from tuberculosis, and when administered over a sufficient length of time possessed a curative action on a tuberculous process.

This preparation was taken up enthusiastically by the medical profession, but at first there were no methods of regulating the dosage, and it was given without any reference whatever to the reaction produced and the results were disastrous. Subsequent study, however, as to tuberculin administration both for diagnostic and curative purposes has placed it on an entirely different basis.

Simply to refresh your memories on the subject I will briefly mention some of the different forms of tuberculin at present being utilized. The

first is Old Tuberculin. This tuberculin is called "Old" to distinguish it from the later preparations, and is prepared from the pure cultures of the tubercle bacillus, of five or six weeks' growth on 5 per cent. glycerin bouillon. The culture medium containing the germs is evaporated to one-tenth of its volume and filtered through porcelain to remove the germs. Old Tuberculin contains all of the soluble secretions of the tubercle bacillus in a 50 per cent. glycerin solution.

Bouillon Filtrate differs only from Old Tuberculin in that no heat is used in its preparation. New tuberculin T. R. was first produced by Dr. Koch. He decided the Old Tuberculin simply produced immunity to the toxin and not to the germ. For the production of this new tuberculin Dr. Koch used a virulent culture of the tubercle bacillus which he dries *in vacuo* and finely pulverizes in an agate mortar.

The pulverized triturated bacilli are ground and treated with a salt solution, centrifugated, and the supernatant, opalescent fluid discarded. The residue from this is dried, ground and treated with physiologic salt solution, centrifugated and the clear supernatant fluid collected and retained. This process is repeated until all of the residue is taken up. The clear centrifugates are united and preserved by treating them with glycerin 20 per cent. Each cubic centimeter of the T. R. is standardized to represent 10 mg. of the original dried tubercle bacilli.

In the preparation of Bacillen Emulsion, the finely pulverized virulent culture of the tubercle bacilli is used to one part of which are added 100 parts of distilled water and 100 parts of glycerin. The resulting suspension should contain 5 mg. of dried substance to each cubic centimeter.

DO AUTOGENOUS VACCINES MITIGATE THE DISTRESSING SYMPTOMS OF PULMONARY TUBERCULOSIS? *

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Pleurisy is recognized by most authorities as a frequent forerunner of pulmonary tuberculosis. We see patients with advanced pulmonary tuberculosis whose symptoms date from what appears to be their last attack of pleurisy. At the time they present themselves for medical assistance their complaint may be only a distressing cough, which is dry and unproductive, and which becomes more severe when they assume a recumbent position. Relief follows expectoration. Night sweats, repeated attempts at expectoration, loss of sleep and poor nutrition debilitates their physical condition and tends to interfere with recovery.

On admission to the hospital or to the dispensary such patients usually deny previous illness. When questioned further, they admit having had attacks of bronchitis or tonsillitis. The persistent troublesome cough,

* Read before the Chicago Medical Society, Dec. 6, 1911.

occasional blood-tinged sputum, loss of weight and night sweats drive them to seek medical advice, and on examination pulmonary tuberculosis in various stages is usually found.

Repeated careful examination of sputum in advanced and moderately advanced cases of pulmonary tuberculosis, before or after a hemorrhage, revealed the constant presence of pneumococci, streptococci, *Micrococcus tetragenus* and *M. catarrhalis*, in addition to tubercle bacilli. During a hemorrhage, pneumococci were sometimes the only organisms found.

Low opsonic indices to pneumococci, and streptococci in pleurisy and the constant presence of either of these organisms in pyopneumothorax suggested the application of autogenous vaccines in order to mitigate some of the symptoms of tuberculosis.

The cases selected were from the dispensary of the Illinois Post-Graduate Medical School, and from the Cook County Tuberculosis Hospital. They may be classed in the following groups:

1. Incipient pulmonary tuberculosis with night sweats, frequent unproductive coughing, positive von Pirquet reactions, and sputum in which tubercle bacilli could not be demonstrated.
2. Advanced pulmonary tuberculosis.
3. Cases with cavity formation in one or both lungs, accompanied by frequent hemorrhages.

Vaccines were made from the sputum in the following manner: The patients were instructed to wash their mouths with an antiseptic prior to expectoration. The first part of the sputum was rejected. The last part was washed with a sterile saline, and cultures on glucose agar, blood agar and blood serum were made. Pure cultures of the organisms named were obtained and vaccines made from them. The initial dose was about 50,000,000 of either pneumococci, streptococci, *M. tetragenus* or *M. catarrhalis*, or a mixed vaccine according to the organisms found in the sputum. The dose was doubled weekly until it consisted of 200,000,000. The object of using small doses was to study individual susceptibility.

The reactive symptoms after the injection of the vaccine were local hyperemia and tenderness at the place of injection, the symptoms being greatly relieved by the application of hot compresses. The latter also prevented the persistence of the hard indurated nodules which are common after bacterin injection. Not only was local pain persistent in places where the local lesions were in progress, but tenderness was elicited in areas of a former pleuritis.

In a few days the cough became productive, the mucopurulent expectoration was replaced by a serous-like material which was expectorated with ease. Respirations, which were labored and wheezy, grew easier, and gradually became normal. The patients were able to rest comfortably, night sweats ceased, appetite improved, and gain in weight was noticed. Cases with marked exhaustion showed no reactive symptoms until one or two days after the first injection, or only after the second or third injection.

In far-advanced cases with cavity formation, the distressing symptoms did not entirely cease, but some relief followed. The intervals

between the coughing spells were prolonged, and expectoration was easier. They were able to rest for longer periods without the use of narcotics, or the use of the various expectorants. With cessation of digestive disturbances the appetite greatly improved.

When bacteria and their products gain access to the body, protective substances are produced in the body which become antagonistic to the life and development of these organisms, and thus prevent general infection. These substances have been established by animal experiments, and are known as antitoxins, opsonins, etc.

Vaccines produce something in the blood to which the term opsonins has been applied. They assist the leukocytes in taking up and destroying that organism against which the person is opsonized. The opsonins are not only specific for a certain kind of organism, but also for various strains of the same organism. It is for this reason that there is a growing tendency to use not only stock vaccines, but stock vaccines of a polyvalent character (or different strains of the same organism), or the many varieties of the different bacteria. During the time of an infection, instead of giving a specific vaccine, a polyvalent one is given. Theoretically, new antibodies representing each strain of the bacterin ought to be produced. But the cells in a patient's body that manufacture the above substances are already taxed to the limit to produce specific antibodies to antagonize living bacteria or their products. Instead of obtaining results from the vaccines no improvement is noticed. This may perhaps explain why so many have lost faith in vaccine therapy. With the above in view the following were tried:

Cases where autogenous vaccines produced marked reaction with ultimate disappearance of distressing symptoms, little or no reaction resulted when the same vaccine was used on other patients.

Strains of pneumococci or streptococci were obtained from patients during a severe attack of pleurisy or bronchitis. Strains of the same bacteria were also obtained from cases in which there were no distressing symptoms. Differences in the reaction were noted in the cases of these different strains, autogenous vaccines giving marked reaction with the disappearance of the distressing symptoms, while the same organisms used on other patients as stock had little effect. It is also to be noted that in the acute infections autogenous vaccines gave marked reaction, while in those in which distressing symptoms were absent, no reactive symptoms could be noticed with autogenous vaccine.

It can be readily seen that in the presence of mixed infection Nature's attention is withdrawn from the healing or encapsulating process of the tuberculosis invasion. When one lung is tuberculous, and the other becomes pneumonic, the chances for recovery are nil.

Might we not modify the aphorism of Niemeyer, that "the greatest evil that can happen to a consumptive is that he should become tuberculous," and say instead "the greatest danger that can happen to a tuberculous patient is that he should contract pleurisy or pneumonia"? By immunizing patients against the organisms obtained from their

sputum, we may hope to prevent the tuberculous lung from becoming pneumonic, relieve the distressing symptoms which cause exhaustion, aid Nature in the healing process and thus favor recovery.

Fifty cases were studied: twenty incipient, twenty-two advanced and eight far advanced cases. The following histories will illustrate some of the cases of each group:

1. J. O., white male, aged 25 years. Five years ago he had pleurisy that made him subject to frequent attacks of pain in the chest. He suffered from a similar attack ten months ago from which he never recovered. The coughing spells were so frequent and unproductive that he could seldom have a night's rest. In attempting to expectorate he frequently vomited, which produced digestive disturbances. His night sweats were exhausting. The sputum from which the vaccines were made contained many tubercle bacilli in each microscopic field and pneumococci from which the bacterins were made. No reaction was manifested until the third injection was given, when the cough gradually became productive and the sputum, which was at first tenacious and mucopurulent, became serous. The intervals of coughing were not only longer but he was able to expectorate easier larger quantities which decreased later. This enabled him to rest for a longer period.

The cessation of the exhaustive night sweats and the longer periods of rest enabled him to sleep. His appetite not only improved but his weight, which was 105 pounds before the vaccines were given, was 128 pounds after the tenth dose. A decrease in the number of tubercle bacilli was noticed in each microscopic field.

2. Mrs. Z. W., aged 45 years. Twelve years ago she contracted a right-sided pneumonia and two years later she had a similar attack. Last year she had pleurisy of both apices, after which she suffered constantly from bronchitis and asthma. The frequent unproductive cough greatly exhausted her, night sweats were marked and the gastro-intestinal tract was disturbed.

Pneumococcus and micrococcus catarrhalis were the only organisms present in the sputum. After the first dose of the vaccine the reactive symptoms were marked. The cough gradually became productive and it was easier to expectorate. When six injections were given the cough and expectoration not only stopped but the respiratory efforts which at first were difficult and brought on frequent paroxysms of dyspnea, gradually became normal. The night sweats stopped, the appetite improved and she gained eight pounds in six weeks.

3. F. Y., white female, aged 19 years. Three years ago she had a left-sided pleurisy from which she suffered an entire summer. She never fully recovered after that. Three months ago she suffered from a severe attack of coughing which was unproductive, and in attempting to expectorate she frequently vomited. Frequent spells of coughing with exhaustive night sweats caused her to be awake nights. No tubercle bacilli could be demonstrated in the sputum after many attempts with various methods. The only constant organisms present were pneumococcus and micrococcus catarrhalis, from which the vaccines were made.

When three injections of the vaccines were given she began to expectorate easier, night sweats decreased and sleep was less disturbed. At this time occasional tubercle bacilli were noticed in the sputum. These were seen in greater numbers as the bacterins were repeated. After the tenth injection the coughing spells were only occasional but the night sweats stopped and she was able to sleep the entire night without being disturbed by coughing. Her appetite is excellent and her weight is gradually increasing.

4. B. T., white male, aged 32 years. Patient states that, except colds and coughing, he was not seriously ill until two years ago, when he had a pulmonary hemorrhage. He admitted, however, being occasionally subject prior to the hemorrhage, to colds, coughing spells and night sweats. When seen last August he suffered from another severe pulmonary hemorrhage which did not respond

THIS TABLE ILLUSTRATES SOME OF THE CASES STUDIED

	Name	Sex	Age	Time	Night Sweats	Cough	Appetite	Pain	Sleep	Previous Illness
Incipient cases.	L. P. . .	F.	24	B A	Marked Stopped	All the time and unproductive. Stopped.	Poor. Good.	Right chest. None.	Disturbed. Well.	Pleurisy two years ago.
	M. W. . .	M.	35	B A	+ Constant night and day Stopped	Frequent and unproductive. None.	Poor. Improved.	Chest. None.	Disturbed. Well.	Pleurisy 14 years ago.
	Mrs. S.	F.	30	B A	Occasional None	Unproductive and asthmatic. Relieved.	Poor. Good.	Right chest. None.	Insomnia. Well.	Pneumonia 13 years ago and asthma six weeks ago.
Moderately ad- vanced cases.	E. E. . .	M.	19	B A	Marked Stopped	Constantly. Only at night and morning.	Poor. Good.	Both apices. Stopped.	Restless at night. Well.	Typhoid-pneumonia two years ago.
	H. W. . .	M.	29	B A	Exhausting Stopped	Always. Occasionally.	Poor. Good.	Right apex. Stopped.	Restless. Good.	Pleurisy 6 months ago.
	J. W. . .	M.	30	B A	Marked Less frequent	Constantly. Occasional.	Poor. Very good.	Right chest. Stopped.	Poor. Well.	Pleurisy a year ago
Far advanced.	A. D. . .	..	24	B A	Exhausting Stopped	All the time. Night and morning.	Poor. Good.	Left Chest. Stopped.	Disturbed. Good.	Pleurisy two years ago.
	M. F. . .	M.	43	B A	Marked Stopped	Constantly. Less frequent.	Poor. Voracious.	Right chest. Stopped.	Disturbed. Good.	Pleurisy last March.
	E. L. . .	..	49	B A	Frequent Occasional	Constant and difficult. Easier and less frequent.	Poor. Very good.	Chest. Occasional.	Disturbed. Improved.	Frequent colds for years.
	M. F. . .	..	20	B A	Exhausting Less frequent	Troublesome and frequent. Easier and productive.	Very poor. Improved.	Left chest (cavity). Not marked.	Restless. Well when not coughing.	Pneumonia 5 years ago.

A = after vaccination. B = before vaccination; +, whenever patient went to sleep.

to treatment. The sputum, which contained tubercle bacilli, was also full of pneumococci from which the vaccines were made. Owing to his critical condition the vaccines were withheld for awhile, but as his condition did not improve it was decided to give a small dose. Ten million bacteria were given, hypodermically. No reaction was noticed.

The following week, Aug. 19, 1911, the vaccines were repeated. There was marked pain in both apices and in the axillary region. The expectoration became profuse and easier, and the hemorrhage seemed to decrease. Aug. 26, after the injection patient feels much improved, hemorrhage stopped and night sweats were not so exhausting. He was able to sit up in bed. Sept. 2, patient is able to walk, enjoys a good appetite, and the little he expectorates is without discomfort. Sept. 9, patient coughs only for a short time when going to bed, which stops after he freely expectorates. The night sweats entirely stopped, and he is able to sleep undisturbed the entire night. After ten injections were given, the patient's condition is good and he gained fourteen pounds.

A. HISTOLOGIC PATHOLOGY OF TONSILS REQUIRING REMOVAL *

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In many instances the microscopic examination of the tonsils removed is necessary to demonstrate the important pathologic changes that require the extensive radical operation of tonsillectomy. For instance, you may have large tonsils in one case, and these cause very few symptoms, either local or general, while the second case of identical appearing tonsil on gross examination will produce marked local, regional and general symptoms of infection; the histologic examination will clearly demonstrate the reason why. The same is true of the so-called submerged, small, degenerated tonsils. In one case it is inoffensive; in another it produces general or local septic processes; in the third there are foci of tuberculosis. The microscopic demonstration of the reasons for certain individual findings as, for instance, the marked distention of the upper crypt, or for that matter most of the tonsillar crypts with their cheesy masses, and, furthermore, their infection and degeneration of the epithelium all the way to the capsule, demonstrate the necessity of complete removal. In tonsils in which peritonsillar abscess had existed, one can many times demonstrate the usual place where this perforation occurred. In most instances it is through the anterior portion of the large upper crypt (sinus supratonsillaris of Killian). As to the rarer conditions of the tonsil, as early formation of stones in tonsil, hyperkeratosis, chondromatous formation in the tonsil, the various other non-malignant as well as malignant neoplasms of the tonsils can with positiveness be demonstrated by the microscope and much additional valuable and interesting information will be added to the case in question if this work is done more frequently by the laryngologist than it is. I will now demonstrate

* Demonstrated before the West Side Branch of the Chicago Medical Society, Dec. 15, 1911.

slides of most of the conditions just mentioned, but time will not permit me to go into detail, as, for instance, in giving detailed histories of the cases from whose tonsils these sections were made. These are of inestimable value when discussing the histologic-pathologic diagnosis.

(Demonstrated lantern slides of the above subjects.)

B. DEMONSTRATION OF THE VARIOUS METHODS OF TONSILLECTOMY,
ESPECIALLY THE SLUDER METHOD AND AUTHOR'S
MODIFICATION OF THE SAME

CASE 1.—Man, aged 27 years. Chronic hypertrophic tonsils (cryptic degeneration). Several attacks of acute articular rheumatism preceded by acute follicular tonsillitis.

Operation.—Dissection Method: Under general anesthesia (ether). Grasp tonsil with Andrews' vulsellum forceps. Supratonsillar incision with author's knife on to the capsule. Boetcher's scissors introduced into this opening. The blades of scissors are opened and cavity enlarged; anterior and posterior attachment of the tonsil to the pillars separated by scissors and the further dissection done by the finger, which is covered by a piece of gauze. The operator wears rubber gloves, not only on account of cleanliness, but in public institutions one has not always ruled out the possibility of syphilis in these patients, and there

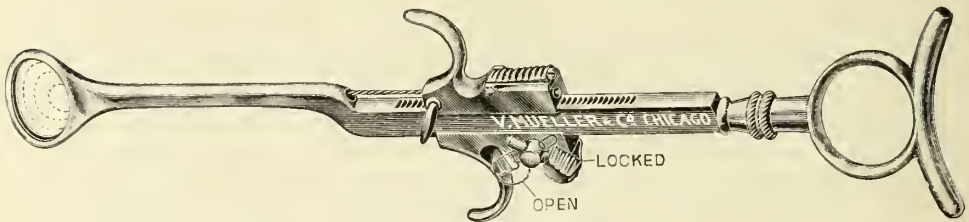


Fig. 1.—The tonsillectome.

is less likelihood of self-infection by the use of the gloves. The gauze is employed on account of the facility of shelling out the tonsil. It is also necessary because the gloves are too slippery to do a finger dissection with. The Pierce-Müller snare is now passed over and around the entire tonsil, which is well pulled inwards and wire drawn down on to the fibrous pedicle at the base of the tonsil. The snare is now locked and by a slow turning of the screw the tonsil is crushed. Free bleeding follows and this is checked first by compression (author's clamp forceps). Patient is reanesthetized. The second tonsil is removed in the same way. The clamp is now removed from the one and put on the other side. Inspecting the cavity for a few moments for bleeding. If any occurs, it is controlled by artery clamps (Murphy). There are four principal points that bleed after tonsillectomy and artery forceps applied in these locations, without any definite vessel being grasped, will control the bleeding. These points are: 1 supratonsillar between the anterior and posterior pillars, from the palatine branch of the speno-palatine (usually the vein and especially in children); 2 base of the tonsillar fossa (plexus of veins); 3 in about the middle portion of the fossa nearer the posterior pillar; from the tonsillar vessels. 4. Very low down and posteriorly. This bleeding occurs very rarely and is from the palatine branch of the ascending pharyngeal. There are occasionally other smaller bleeders from the anterior pillars which require the turning back of this structure in order to grasp them. This case has no adenoids.

CASE 2.—*Sluder's Original Method.*—Boy, aged 8 years. Referred from school inspectors on account of the usual complaints from tonsil and adenoid disease.

Examination: The usual picture of such cases. Tonsils quite large. Operation: General anesthesia, ether. (Atropin, 1/150 of a grain is administered about half an hour before operation in all cases.) By means of the Sluder (original) instrument, the tonsil is lifted out of its bed and brought on to the inferior maxilla, then brought over the alveolar eminence, which is used as a fulcrum, and by the additional use of the finger the tonsil is worked through the fenestrum of the instrument. The blade is now driven home, but great care is taken not to take the finger off before the blade has been driven home, else the tonsil may slip back and only a part of it is removed, or it will at least be buttonholed. After the tonsil is severed from all its attachments, it is found to be hanging to the instrument by a few fibers, not requiring any extra grasping instrument. One notes the free bleeding after this operation, but I believe in most cases it is more apparent than real. When one remembers that we put the vessels all on a stretch, and not until the blade cuts through all the tissues does any bleeding occur, then one can also explain this sudden gush of blood. This in the majority of instances soon ceases, but one may control it by compression of a large hard gauze sponge. (I employ the clamp, Fig. 3, which I have been employing for

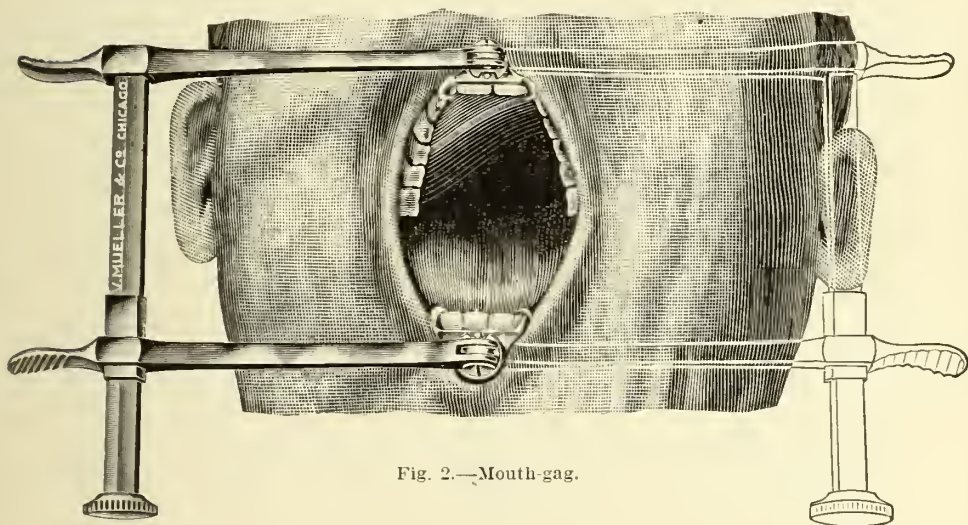


Fig. 2.—Mouth-gag.

this purpose in the finger dissection operation for the past two years.) The same operation is now done on the other tonsil and then the adenoids are removed. It is usually necessary to reanesthetize before removing the adenoids, so that one may have complete relaxation of the soft palate. After palpating to determine the size, locations and consistence of the adenoids, as well as the general configuration of the naso-pharynx, with especial reference to the osteum tubæ cartilaginé, I decide on the instrument that I desire to employ. In this case, being large, not very firm masses, with a very roomy nasopharynx, I will use the Brandegee forceps, taking great care not to get hold of the septum. Twisting the mass off from its attachment, it must not be pulled out, because often this procedure will strip some mucous membrane from the posterior wall of the pharynx. With a curved scissors (Boetcher's), while holding the twisted off mass in the adenoid forceps, it may be cut off clean. If there are adenoid masses laterally behind the posterior lip of the Eustachian tube, as they are in this case, then they are curetted by means of a small Stubbs' curette. The free bleeding that results from this procedure can be controlled in a measure by placing a hard round gauze sponge mounted on an artery forceps behind the soft palate. This latter is drawn forward by the small adenoid curette or pillar

retractor. Firm pressure for a few moments stops the active flow, which, as a rule, stops by itself, only not so much blood is lost by this little maneuver, here demonstrated.

When Sluder's first article appeared on this operation, I began to use it in this hospital and found that in a goodly number of cases I failed, even after I had had good practice in the manipulation of the instrument, and my assistants, who must necessarily do most of this work in this institution, could not do it at all. I, therefore, began to analyze the difficulties and the main one was the attempt to adhere too strictly to the technic as to the landmark of the alveolar eminence. We then began to ignore this landmark, and simply lifted up the tonsil by means of the Sluder instrument until it appeared like a small tumor behind the anterior pillar and while holding the instrument in this position we pushed the tonsil through the ring. It suddenly gave away, showing on the mesial side like a cauliflower growth. Holding the finger steady over the opening on top of the anterior pillar, the blade was pushed down over the capsule of the tonsil, which was now folded upon itself. Now the tonsil was severed from all its attachments and found completely removed in practically every instance. Many a time I removed stumps of tonsils previously operated on, and often when I had a new assistant who had not yet learned to do this operation, leaving in portions of the tonsil, I removed these remains of the gland perfectly by this method.

About that time Ballenger's modification of Sluder's instrument came out, and I at once adopted it, because it made it much easier to do the operation.

We will now demonstrate Sluder's method by means of Ballenger's instrument and my modification of the technic.

CASE 3.—Modified Sluder Operation.—Boy, 8 years old. Same history as previous case. Examination: Small tonsils. General anesthesia, ether. Operation: By means of Ballenger's instrument the tonsil is lifted out, as mentioned, without any regard for the alveolar eminence, as landmark or fulcrum. Pushing the tonsil through and driving the blade home, the tonsil is removed with greater ease, owing to the power one may exert without effort with this instrument. In Sluder's instrument it is mostly with the thumb; with Ballenger's it is the strength of the hand that forces the blade through the tissues. In this case the adenoids are not large, so I will employ the middle size Stubbs' adenoid curette and remove the entire mass with one sweep. It is unnecessary to make a number of passes in the removal of these masses. If, as in the previous case, there are adenoids on the sides, then they must be carefully and deliberately removed, preferably with a small curette.

While we now had the tonsil operation developed to our satisfaction, there still remained this gushing of blood from this sudden cut, and to this point I have further modified this procedure by devising an instrument that would sever the tonsil slowly and by a dull method, namely, the snare. This instrument, which I designate a "tonsillectome" (Fig. 1) is the Pierce-Müller snare so modified as to have a small but heavy ring and cannula instead of the simple light cannula. This ring has an inner groove which serves the purpose of hiding the wire loop. The wire loop is twisted in the form of a stylet, which passes through the heavy cannula and is fastened into the lock of the snare like any other stylet. The snare is otherwise the same as the original and operated the same. The technic of the operation is the same as in Case 3, only instead of driving the blade down we draw the wire forward, which is more certain and will remove none of the mucous membrane of the pillars.

I will now demonstrate this method, employing nitrous oxid-oxygen and ether combination anesthesia. Anesthetist, Dr. Ream.

In regard to this method of anesthesia, I wish to state that for more than two years I have employed nitrous oxid-oxygen continuous anesthesia for all sorts of conditions and in a good many cases of tonsillectomy and adenoids removal. These were principally in private practice and in selected cases. Dr. Ream usually

gives the anesthetic. It has been uniformly satisfactory, only it is still too costly for general use.

CASE 4.—*Sluder's Operation with Tonsillectome:* Girl, 5 years old. Similar history to last two cases. Examination: Fairly large tonsil. Operation: The tonsillectome is passed across the tongue, the tonsil lifted out by the instrument, pushed through the ring, and the wire drawn down while the finger guards the opening to prevent the tonsil slipping back. The snare is now locked and it cannot slip back any more. A vulsellum forceps grasps the tonsil so that when it is ecrased it will not drop into the throat or be swallowed. (The latter happened in one case.) The screw of the tonsillectome is now turned slowly and the ecrasing of the fibrous portion of the base of the tonsil performed. One observes that there is much less bleeding by this method. The reason for that is that after the tonsil is pushed through and fastened by the snare, the tissues are allowed to drop back into their natural position. Then one takes more time in cutting off the attachments, and, lastly, the severance is accomplished by a dull method. I do not wish to imply that there is no bleeding, but never as much as by the sharp



Fig. 3.—Tonsil-clamping hemostat.

methods. The same loop is employed for the second tonsil; in fact, may be used a number of times by simply unlocking the snare and pushing the collapsed loop into the slit of the ring and forcing it to open up, when the snare is again locked and ready for the next tonsil.

We now remove the second tonsil in the same manner, passing the instrument from the opposite side. The adenoids are removed in the same manner as in the preceding case.

In conclusion, I wish to say that in adults, in the cases where one has to deal with marked adhesive changes, as after abscess, etc., in these very small flat tonsils I find it is better to dissect them either under local or general anesthesia.

I have done a number of tonsillectomies by the Sluder method, and its modifications, under local anesthesia, but would advise against it on the principle that in order to do a complete operation one must bring the tonsil forward, must have the muscles relaxed, and that, no matter how well anesthetized locally, the patient will instinctively control these muscles and make the technic difficult and the operation painful.

The mouth-gag (Fig. 2) is one I have devised to overcome the objections I have found with most of the mouth-gags.

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FROM THE VIEWPOINT OF THE INTERNIST

J. F. Hultgen: This subject has been given so much discussion of late that there is little to be added. On the one hand we are taught by immunologists that it is a good thing to have an infection localized because it will then produce its own antibodies and the patient will recover. From the pathologic reports of Dr. D. S. Davis, from personal and other experiences, I judge that there is no distinct relation between the anatomy of the tonsil and the clinical findings.

The relation of the tonsil to the lymphatic system or to the thymus gland is not well known. Just what and where the importance of the tonsil comes in is difficult to state. The bacteriologists have accomplished little in this field of investigation, beyond the demonstration of an exceedingly variegated saprophytic flora of the mouth and throat.

I have long held that the function of surgery is to correct mechanical deformities, whether congenital or acquired. I mean that the legitimate realm of surgery (whether of the abdomen or of the throat) is to do away with obstructions totally or partially. In abdominal surgery, this consists principally in the institution of proper drainage or the correction of congenital defects. In tonsil surgery the indications for complete enucleation have not as yet been securely placed. Judicious choice in the therapy of hypertrophied or infected tonsils is often a matter of difficulty. For the internist it would seem to me, a wise conservatism would be the normal attitude. To counsel enucleation of every tonsil that projects beyond its two pillars without interference of breathing, phonation, or hearing would, of course, be wrong. No routine disposal of cases but individualization. Some questions in medicine are proper subjects for discussion before medical meetings, but not for the teaching of undergraduates, at least not for dogmatic teaching. The history of medical advances from Ephraim McDowell, Marion Sims, and Lawson Tait down to the present day gives ample proofs of the pernicious influence of dogma. Such a condition is likely to follow the case of abnormal, or apparently abnormal tonsils. I do not believe an operation should be done without having the spleen investigated, the condition of the lymphatics well looked into and a hemanalysis made.

Just how early children should be operated upon, or just how early the influence of diseased tonsils enters into other morbid conditions is a matter for individual and sober judgment. There should be no tonsillectomy without preliminary thorough examinations of the patient. Mention was made of a case where the patient had syphilis and had infected someone else. Such cases are not at all rare. Mercurial treatment here would have rendered tonsillectomy superfluous. I have now a case of Mikulicz disease. The entire pharyngeal ring of lymphoid tissue is involved in addition to hypertrophy of the salivary glands, but I have not settled yet whether or not to operate. Such cases are on the borderland of primary blood diseases. Ulcero-membranous tonsillitis, or Vincent's angina is not so very rare. It is usually unilateral. One distinguishing thing about this symbiosis, or Vincent's angina, is that it produces regular buboes, resembling syphilis; I suppose because it is caused by spirochaetae.

I think the unqualified statement of Dr. Billings that the removal of tonsils is indicated in conditions growing out of focal infection should be taken with a grain of hesitation. We all are convinced of his earnestness, but at the same

time I think that biochemistry of vaccines is so little known, the mechanism of their action as yet so darksome, and the relations between chronic focal infections and various morbid conditions so loose, that we had better act with circumspection. Nature has provided us with an elaborate defensive system and I think the tonsil is meant as a defensive and eliminative organ. As such it behooves us to go slow in preaching removal of all abnormal tonsils some of which may heal under medical therapy.

I believe the Health Department is a little too active in that respect and does not leave the diagnosis enough to the family physician. Very often chronic tonsillar hypertrophy, like the status lymphaticus, or the exudative lymphatic diathesis, or scrofulosis, is hereditary. In such cases preliminary constitutional treatment must be thought of and will often be found to successfully remove interference with breathing, articulating or general health. Nevertheless the words of Drs. Billings, Beck, Corwin and others should be to us what the whispering oak trees were to the meditative Teutons: a presentiment of dawning truth.

FROM THE SURGICAL STANDPOINT

Dr. George C. Amerson: The ground has been so well covered by my predecessors this evening that little remains to be said except the consideration of the tonsil as a factor in the production of surgical diseases. Infections resulting from the tonsil may be divided into two classes; those resulting from direct contiguity and those transported by means of the blood stream or the lymphatics. We are all aware of the possibility of the tonsil being the primary focus of infection with extension into the glandular elements, also into the loose cellular tissue and spaces of the neck with resulting cellulitis or abscess.

The cases of so-called idiopathic or unknown origin no doubt in many instances have their primary lesion in the tonsil. Cases of osteomyelitis, peritonitis, pleuritis and arthritis and many others have been proven to have their origin in a tonsillar infection.

Recent investigations along the line of the tonsils as a primary source of infection have led us to believe that a great percentage of these cases of unknown origin can be traced primarily to the tonsil and the removal of all pathologic tonsils is going to be a great factor in eliminating this class of cases. Direct association of acute tonsillitis has been recorded in exophthalmic goiter. So there is no question but that the early removal of infected tonsils, thereby preventing the absorption and transportation of septic materials by means of the blood stream and lymphatics to other areas is a move in the right direction and will prevent many complicating surgical conditions.

FROM THE STANDPOINT OF THE ANESTHETIST

Dr. F. K. Ream: I am sorry I was unable to get here sooner so as to be able to administer the anesthetic in all of these cases, but from those that did get it you will see something of its effect.

It is not only possible for us to use oxygen in general work and heavy surgery, but in tonsil work as well. By all means the anesthesia for nose and throat is the most difficult to administer. Out of a number of hundreds of such cases I have yet to have an unfavorable result.

The apparatus gives you oxygen, nitrous oxid, and a bit of ether that may be picked up if it seems necessary and a little heating device.

FROM THE STANDPOINT OF THE LARYNGOLOGIST

Dr. Edwin Pyncheon: I have been much interested in this clinic and in the paper. The tonsil question, in my opinion, is one of great importance to laryngologists. I want to go further. For the general practitioner the tonsil question, if correctly understood and fully appreciated, is one of the most important that can be considered.

In the removal of tonsils, or in their consideration we find two distinct characters of tonsils. First we find those that are detrimental mechanically. The

commonly thought-of feature of the enlarged tonsil is that it is an impediment to breathing. In some ways and in some cases that is so, but not in all. In any case wherein it is an impediment it should, of course, be removed because if breathing is not properly done the blood is under-oxygenated.

There is more to the structural formation of the tonsils than simply their interference with respiration. In the first place they may interfere with the normal mobility of the pillars and the closure of the soft palate against the pharynx, so that from a mechanical standpoint, if nothing more, they are thus a source of annoyance.

Every time the patient swallows the tonsil is "bunted" up against the Eustachian tubes. You may say, that cannot be; that these two structures are too far apart. That may be, but the effect is nevertheless transmitted by operation upon the intervening tissues and thus tending to produce ear troubles.

The next consideration is that wherein the tonsil is a detriment on account of being diseased. A large number of throats examined have tonsils in such condition. You might examine two throats and could not tell, from the appearance of the tonsil, which one causes rheumatism and which one does not. If you are wise you will remove them in both cases. I have removed over 3,000 tonsils and I have never failed to get benefit in some direction.

Diseased tonsils in different patients produce entirely different effects. One has catarrh; another has recurrent tonsillitis; another has ear trouble; another (if he happens to be a singer) will have recurrent laryngitis which seriously handicaps him, while another has gastro-intestinal catarrh. It is common to have patients come in with gastro-intestinal troubles who have bad tonsils. I have had patients come to me complaining of gastro-intestinal catarrh (they don't call it that, to be sure, but that is what it is) who don't have any appetite, have indigestion, are constipated, and seem to lack their normal gusto for food, as was very ably described by one patient, a Catholic priest. All of these cases are improved by removal of the tonsils.

I might mention one case upon which I operated. The patient, four days less than a year old, was the daughter of a doctor. She was not a mouth-breather and did not have any of the ordinary symptoms, such as sore throat, or any of the symptoms that a child would ordinarily show with tonsils that were quite enlarged. It had, though, what I might term "chronic insufficiency of digestion." It had to be given predigested foods. I removed the tonsils radically, and took no other medical steps. In a few days she seemed apparently well, could eat and digest well and is now a healthy, ruddy child of four.

A great deal has been said against removing the tonsils "because God put them there." What about the foreskin? Didn't God put that there? And yet from the time of Moses down we hear of His commands to remove it. There must have been some mistakes in creation.

We sometimes hear the doctor say: don't touch the tonsil, it will atrophy after a while. It does atrophy but by a slow process of suppuration, getting smaller and smaller. How long does that take? I operated upon one patient 76 years old, and another 72, with marked benefit, and have operated on no end at 50 and over. So it would seem that Nature is not so very active, and that her modus operandi of getting rid of tonsils is not so very satisfactory.

Then there is another statement that the tonsil is a part of the lymphatic system, and if it is removed the economy will suffer. The bulk of the tonsils and adenoids is small in comparison to this entire system. If you take out a kidney, or lose a lung, the patient will live in comparative comfort, so I guess no one will suffer so very much from removal of a little bit of the lymphatic system.

It is said, also, that the tonsils are the open-end of the lymphatic system. If this lymphatic system has open ends, why don't it have them elsewhere? There must be some reason for it.

Now this is not original, but I am disposed to endorse it: During fetal life the intestinal tract does not act. During fetal life the kidneys do not act. During fetal life the skin does not act, and the lungs are also not in use. Consequently, during fetal life we have no one of the usual methods of elimination.

Yet in the growth of the child metabolism is taking place all the time and there must be some method of taking care of the residues. Now, it has been suggested by Auten that the tonsils perform this function by discharge into the amniotic fluid, and if this is the case then, having performed their function, there is no particular need for them after birth. I rather think that this is the most rational explanation that has yet been offered for their existence. It would seem that this is so for, having performed their function Nature promptly provides for their being atrophied, and if there is not something to cause their becoming hypertrophied they do diminish in size. So I can see no reason for holding the tonsil so holy that we cannot remove it.

We cannot understand why one patient has rheumatism and another has not. Let me tell you why a patient with bad tonsils has rheumatism: we know such tonsils secrete pus, and we know that pus contains bacteria and so from this premise we know that the discharge from the tonsil may produce rheumatism. We know it clinically because when a patient with rheumatism from this cause has his tonsils removed he has no more rheumatism. But that don't explain why another patient with bad tonsils don't have it; or why he may have it, have the tonsils removed, and does not get well of rheumatism. Certain points in the body are weak. Certain points have a tendency to suppuration. I will enumerate some. The most important is the tonsils, and after them comes pyorrhea alveolaris. These two points produce suppuration more frequently than any others. While, to be sure, there is not much from each tooth there are a good many teeth. The next point, in my estimation, is the chronically suppurative appendix. The surgeon sees such a patient and says he is all right. He is not, for that pus goes on and on poisoning his system. Why is it you read that the great Judge So-and-So was taken suddenly ill, hurried off to the hospital for operation and there they found the appendix completely rotten. That appendix was rotten for months and would have been unrecognized for many months more except that something precipitated the acute attack. There are other points in the body where suppurative processes go on which do not for years produce acute manifestations, but may at any time produce rheumatism, Bright's disease, or other trouble.

The nasal sinuses are often in a diseased condition without the patient knowing it. First there is a catarrhal sinusitis. The difference between the catarrhal condition and a succeeding suppurative sinusitis is only one of degree and in the germ that happens to effect it.

Many a general practitioner looks into a throat and says "those tonsils are all right" when I would say, "no." Why this difference? In the first place it is the picture of the mucous membrane which I see in the throat, and the appearance of the saliva. There is a frothy, unnatural saliva, and a pronounced degree of redness in the arch of the pillars. It is common to find a clear line of redness; pink on one side and red on the other, that goes up on each anterior pillar from the tongue to the uvula and thus causing an "arch of redness." That is a peculiarity of the diseased tonsil. I do not know of a case presenting such appearance that would not be benefited by removal of the tonsils. If you had a patient come in with red eyes, you would at once inquire into the cause of the trouble. You would not think of telling him there is nothing the matter with his eyes. The color of the mucous membrane presents just as fruitful a field for diagnosis, and when abnormally red always indicates trouble.

When a tonsil starts out diseased there is a certain amount of disease all the way along until it is removed.

Dr. Jos. C. Beck (closing the discussion): The first speaker, in his remarks on conservatism, appealed to me very strongly. I operate on a great many patients here at the hospital. Quite a number leave the hospital without operation. Many I consider too young. That touches upon a point to lay particular stress upon. Early in the life of the child the tonsil does have a function. I don't know so very much about the intrauterine life, but it has a function in the first year and year and a half. I rarely remove the tonsils and adenoids in a

child under two years unless it cannot swallow and breathe while nursing. In that case I only remove as much as seems necessary to give comparative comfort. In ten cases I have seen some very serious results and two deaths from conditions quite analogous to removal of the thymus in dogs, from too early removal of adenoids or tonsils. Sajous, in his work on the ductless glands, also mentions this point and I believe along this line of investigation something of importance will be worked out.

The pendulum always swings to the opposite extremes. We are possibly doing more operations than there is need for, but we are constantly finding out things that will, undoubtedly, lead to better and more exact diagnosis and indications for the radical removal of tonsils.

So far as the Health Department is concerned I think its work is very good. An appreciation of the importance of these conditions must be driven home to the mind of the general public.

The man who does a tonsillectomy in the office is taking a chance, especially under a general anesthetic. With gas, or such an anesthetic as this, there is not so much danger. Operation may be done in adults and the hemorrhage controlled without need of a tonsil or hemostat or by artery forceps, especially under local anesthesia. It is our practice to see that all hemorrhage has stopped before the patient is put to bed. They do not leave the operating-room until it does.

We shall be only too glad to have any of you gentlemen come here any Tuesday or Saturday and I will demonstrate to him this proposition wherein the hemorrhage is not so marked. I showed the method to-day and have seen a sufficient number of cases at, and after operation, so that I am satisfied that the method I am advocating is good in principle.

A STUDY CONCERNING THE NATURE OF THE WASSERMANN REACTION *

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In order to be able to grasp the principle of the Wassermann reaction, it is indispensable to be acquainted with the laws of immunity. These laws, as laid down by the medical investigator, fully agree with the teaching of the investigator in natural sciences. This branch of modern medicine frankly admits and makes practical use of the fact that the struggle for existence has endowed all of the contemporary animals with a rational internal organization. In this truly scientific branch of our diagnosis and therapeutics we intentionally injure by the introduction of a foreign substance into a living body, and expect the injury to be converted into a stimulus of the defensive mechanism of the host. A foreign substance introduced into a living being will, under normal conditions, be the cause of a defense which consists, among other manifestations, in the formation of complex substances, known as antibodies, immune bodies, or amboceptors, as Ehrlich erroneously calls them.

Whether the antibodies are formed accidentally by disease or purposely by inoculation is of little concern to us, except that it helps to emphasize the fact that the animal system works on rational principles.

* Read at the meeting of the Chicago Medical Society, Jan. 3, 1912.

We have not been able to demonstrate antibodies in every disease. This may be due to the inadequacy of our methods of examination, but, on the other hand, we should not forget that the animal body is a seasoned fighter, and probably does not depend for its defense on one chemical body, or on one method of fighting only.

Antibodies are considered to be specific. By that it is meant that they have a special affinity toward the substance which gave rise to it. An antibody that has affinity for the erythrocytes of the sheep will not bind those of the rabbit or dog, or any other animal.

In order to demonstrate antibodies, two respectively, three distinctly different substances are required:

1. The foreign substance, the antigen (cell, poison, etc.), against which the antibody has been formed.
2. The antibody produced in the animal as a response to the injury.
3. The so-called connecting substance, the complement.

Bacteria or corpuscles, treated with specific bacteriolytic or hemolytic "amboceptors," absorb the latter and become sensitive to the dissolving action of the complement. An antigen thus treated is called sensitized, and the phenomenon of dissolution is called bacteriolysis or hemolysis, as the case may be.

The substances that produce a corresponding specific action with antibody are known as antigens. The phenomenon of disappearance of complement in a mixture of antigen and antibody is commonly called fixation, or deviation of complement.

By repeated injections of sheep or human blood corpuscles into a rabbit, we may produce a specific antibody for sheep or human erythrocytes. Antibodies thus artificially produced or increased are known as immune antibodies, or simple immune bodies, and the process by which we produce these bodies is known as immunization.

A foreign body (antigen) bound by its specific immune body (antibody) cannot, speaking for practical purposes, be freed from it again by washing. For instance, red sheep corpuscles bound by an antishcep "amboceptor" do not lose it any more. Such corpuscles are called sensitized. The addition of complement will promptly dissolve them. The dissolution is called hemolysis and the three factors (corpuscles, antibody and complement) which enter the reaction represent what is known as the hemolytic system.

In order to prove the presence or absence of certain toxins (antigen) or certain antibodies, we can make use of the phenomenon of labile or active complement, thus using the hemolytic system as an indicator.

This is exactly the principle that Wassermann has applied to the serum diagnosis of syphilis. He adds the serum of the patient in question to an extract of syphilitic liver in presence of a complement; if the mixture contains the (corresponding) antibody and antigen, the complement will be deviated and will not produce hemolysis with sensitized corpuscles which are added after the antibody-antigen mixture has been incubated for one hour; or, in other words, after it has been given ample time to bind the complement.

SYPHILITIC TOXIN AND ANTIBODY

Wassermann, finding the liver of a congenital syphilitic new-born full of *Spirochaeta pallida*, thought he could, by macerating the organ and extracting it with an aqueous solution, get enough specific microorganisms and toxin in the extract to use it as an antigen. It was found, soon after the appearance of his first publication on this subject, that alcoholic extract could be used instead of the aqueous, and that the extract of normal as well as syphilitic organs has "antigenic" value. The aqueous extract is very unstable. It, therefore, had to make place for the alcoholic mixture, and to-day we use the latter almost exclusively, and reserve the aqueous for emergency work only. The aqueous as well as the alcoholic extract contains lipid substances and soaps, and we can easily show that the lipoids, such as lecithin, cholesterolin and protagon, have an antigenic value, provided that they have not been heated for any length of time above 70 degrees, Celsius. But lipid substances are found in every healthy animal. They are known to absorb and retain toxins. They are then a means of defense and are of necessity increased in disease. We, therefore, should regard them as a physiologic, normally present, protecting substance, as antibodies rather than as toxins, as Wassermann thought he had extracted.

Syphilis, being a mild infection, apparently does not injure the human body severely and acutely enough to stimulate it to the production of a specific antibody. It is the mildness of this infection which permits it to become a chronic affection, or it may be that the defensive mechanism of the human system is lacking the properties necessary for the production of such an antibody. What we are testing for in the Wassermann serum reaction is probably a toxin, a metabolic product, produced by the *Spirochaeta pallida*, and which not even necessarily needs to be specific, and not an immune body produced by the human system in response to the syphilitic invasion.

Investigation concerning the nature of syphilis in a clinical way as well as by laboratory experiments tends to show and force one to the conclusion that the white race has formed more or less of a symbiosis with the *Spirochaeta pallida*.

It takes apparently several generations to throw off this micro-organism, but while it inhabits the human system, it affords protection somewhat against severe new attacks. What is called malignant syphilis is found, as history shows, almost exclusively on virgin soil.

In patients with good vital resistance the positive Wassermann reaction quickly disappears under the influence of specific treatment. The presence of mercury or arsenic in the blood current and in the tissue of the patient interferes with the growth of the spirochete, the production of syphilitic toxin is reduced or completely stopped, although the microorganism is still alive. But at the same time I will not neglect to mention that experiments which I have made with animals to which mercury or arsenic had been administered show that their inactivated blood serum, if added to the hemolytic system, will promote hemolysis. I believe, for instance,

that the negative Wassermann reaction which we get soon after the administration of salvarsan is in part due to the presence of arsenic in the blood current. The conclusions I draw from my experiments made up to date in this direction are the following: Either we are testing for a toxin or some of the antisyphilitic drugs dissolved in the serum of the patient under treatment augment the action of our amboceptors, and are instrumental in bringing about a negative Wassermann reaction.

PREPARATION OF THE PHYSIOLOGIC ANTIBODIES

Antigen.—A liver of a congenitally syphilitic infant is cut into small pieces, then rubbed with sand in a mortar, and finally extracted with about four to five volumes of 96 per cent. alcohol at 37° Celsius, for about three to six days. This alcoholic extract is diluted with three times its volume of salt solution, and then titrated in order to determine its "antigenie" value.

It has been made a general rule to use for the Wassermann test one-half of the minimal dose of "antigen," which causes complete inhibition to hemolysis. One-third or even one-fifth of this dose may be enough to cause fixation of complement, with syphilitic serum, but it is best to use the test dose as large as the anticomplementary action will permit.

PREPARATION OF THE PATIENT'S SERUM (THE SYPHILITIC TOXIN)

About 1 to 2 c.c. of the patient's serum is needed to make the test. A very convenient method to obtain it is by puncturing the palmar side of the finger-tip with a small but sharp lancet and filling two or three glass capsules by milking the finger. Or we introduce a stout hypodermic needle into a vein at the elbow and remove 5 to 10 c.c. of blood. In order to bring the veins into prominence, a piece of rubber tubing is placed a little above the elbow. The pulse should not be obliterated by the pressure of the tube. The hypodermic needle should be 1 to 1½ inches long, and should have attached to it a rubber tube, the free end of which is placed into a sterile test-tube to gather the blood.

After the serum has separated from the clot, either by letting the containers stand or by centrifuging them, it is pipetted off and inactivated at 56° Celsius for one-half hour. Cerebrospinal fluid is obtained by spinal puncture, and can be used without inactivation. The test dose is double that of the blood serum.

Experience seems to show that there is more free and active syphilitic toxin and a less amount of other chemical components which might interfere with the complement action in the patient's blood before meals than after; it is, therefore, a wise precaution to take the blood for examination whenever possible shortly before meals. A human serum becomes anticomplementary after a few days of standing. The change sets in more rapidly in the incubator or at room temperature than in the ice-box, and inactivation for ten minutes or more, as given in some text-books, does in few cases only restore it to normal action. I do not use a negative control serum longer than forty-eight hours, and the person from whom I take the blood for such purpose must be a robust, active individual, living mostly an outdoor life.

The Complement.—We commonly call complement a fresh and active serum that is used to reactivate another serum. A serum is called fresh and active for twenty-four hours after the bleeding. The complement action of a serum disappears completely within a few days to a few weeks, if the serum is kept on ice, and an exposure to a temperature of 55° to 56° Celsius will destroy its action in thirty minutes. Complement remains active longer for bacteriolysis than it does for hemolysis. We cannot separate the active substance complement from the fresh serum, and we do not know whether the substance really exists within the living tissue, or if it is formed outside of the animal body only.

The observations I have made in my daily work with the Wassermann reaction and with special experiments made for this purpose, lead me to believe that the complement is a ferment and not a substance that can be bound by an "amboceptor," as Ehrlich and Wassermann contend. My reasons for this conclusion are:

1. Complement is destroyed at a temperature at which we would expect a ferment to perish.

2. I found accidentally that the activity of an amboceptor could be increased by adding a slight amount of acid. It, therefore, occurred to me that there might be some analogy of action between rennet, pepsin and complement. The former two can be activated by hydrochloric acid. I found that a dilution of 1:20,000 hydrochloric acid in physiologic salt solution would not have any hemolytic action itself, but would activate complement, and could be used in the hemolytic system instead of an "amboceptor." During the last year and a half I have made, at the Columbus Medical Laboratory, several hundreds of comparative Wassermann tests, the results of which will appear in a later paper. Suffice it here to mention that the tests made with hydrochloric acid show a higher percentage of positive reaction than those made with antishoop rabbit serum, and that this is in all probability due to mineral substances contained in some of the human serums, which neutralize the hydrochloric acid, and in this way check hemolysis, in spite of the presence of free and active complement.

3. The activity of the complement in a given solution of sensitized antigen does not depend on its absolute quantity as it would have to if Ehrlich's side-chain theory were applicable to this reaction. An increase of the quantity of the "amboceptor" permits the use of a smaller amount of complement, and the increase of complement permits the use of a smaller amount of "amboceptor" in order to produce the desired reaction (hemolysis). In other words, if we use a large amount of "amboceptor," we need a relatively small amount of complement, or vice versa.

4. The amount of complement needed to perform the reaction and the amount of complement actually used up are not the same; the amount varies according to temperature, and the length of time needed for the reaction. The percentage of complement used is larger in slow reaction, taking place at relatively high temperatures, than in a quick reaction, taking place at relatively low temperatures. This is exactly the way an active, a labile substance, a ferment, would act; it is injured and

destroyed because it acts, but not because it is bound by the sensitized antigen. It disappears from the mixture after the reaction has taken place only, or because the reaction is taking place.

5. Other conditions being the same, the activity of complement depends on the concentration and not on its absolute amount present. The same amount of complement that will dissolve several units of sensitized antigen blood corpuscles will dissolve one unit only if the amount of solution is increased accordingly. Complement, therefore, acts according to its concentration, like a ferment, such as rennet, used in the making of cheese, but not like a substance that is bound in certain definite proportions by a second substance.

6. Every other factor being constant, two units of a patient's serum do in their reaction with antigen destroy less complement than one unit does. This fact, again, is entirely contrary to what we would have to expect if the relation of factors entering this reaction were quantitative.

7. Those who make Wassermanns every day must be well acquainted with the fact that, other conditions being apparently the same, we need more complement on a cold day than on a warm one, and also more in the winter than in the summer, in order to produce the same amount of hemolysis in the same length of time. This, again, can be explained easily if we regard complement as a ferment. At such times the solution as well as the instruments with which we work are at a relatively low temperature.

8. Complement will not be deviated in a mixture of syphilitic serum and lipid substances if the latter have been heated for a certain length of time above 70° Celsius. We find the same condition with casein thus heated; rennet will not coagulate.

9. The degree of activity of guinea-pig's blood as a complement can be reduced to one-half of its original value within a week if the hygiene and sanitary condition of the animal are changed for the worse; this again speaks more for it being a ferment than a simple chemical body.

The process of depriving a fresh serum of its complement is called inactivation. An inactivated serum can be restored to activity by the addition of fresh serum. Complement is always capable of reactivating the serum of his own species, but not every complement can reactivate the serums of the other species.

The complement of the guinea-pig is distinguished by an unusual ability to reactivate the serums of other species. Consequently, it is most often used when it is necessary to substitute the complement of one serum for another, which has been destroyed.

It is apparent from the above considerations that the Wassermann test is but a ferment reaction, which can give us but relative value only, and in which we have to lay special stress on the factors of concentration, temperature and time, rather than on the absolute quantities of the substances entering the reaction. Furthermore, since at least one of the antibodies entering this reaction is not specific, the Wassermann test can be specific in a quantitative way only, but surely not in a qualitative.

We find in our clinical work all degrees of inhibition to hemolysis, and we are not justified in basing a diagnosis of syphilis on a weakly positive Wassermann reaction unless other constitutional affections, such as tuberculosis, yellow fever, malaria, chronic alcoholism, chlorosis, etc., can be excluded. This serum reaction which tests for toxins, but not for antibodies, will give us reliable positive information about an active specific infection, but not about an infection in which the production of toxins is essentially reduced or has stopped completely for the time being. In other words, a negative or Wassermann reaction does not necessarily mean absence of syphilitic infection, especially not if the patient is under specific treatment.

Complement is a ferment. The Wassermann serum reaction is a ferment reaction whose rational basis rests on the laws governing fermentation, and not on the Paul Ehrlich side-chain theory.

I wish to express my sincere thanks to Drs. Gehrmann, Evans and Wesener, the staff of the Columbus Medical Laboratory, for assistance in my experiments.

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DISCUSSION

Dr. A. S. Warthin: I agree with Dr. Baumann in two points, but not in the third. We must believe that the complement acts like a ferment; and that it is quantitative, but I do not think our knowledge is in such a state that we can say positively that this is only a toxin-reaction. The question of anti-body formation in syphilis remains yet to be settled. The third point emphasizes, however, what was brought out in the other discussion. A negative reaction does not mean that syphilis does not exist. The patient may have syphilis, active syphilis, and yet the Wassermann reaction be negative. Whether this is because there is no toxin or no anti-body, I am not prepared to say. That must be worked out a little further, but I do think that the clinical significance of the negative reaction must be emphasized. We find that many laymen have a definite idea that a negative Wassermann means no syphilis, and it is a very dangerous thing for such an idea to be allowed to spread.

The spirochæte adapts itself wonderfully to the body, and the body adapts itself wonderfully to the spirochæte. We may find the spirochæte in large numbers in tissues that show no changes at all. We may well ask ourselves why. Does the spirochæte ever get out of the body after infection has once occurred? How many generations of the organism remain in the body? There is a wonderful mutual adaptation between the body and the spirochæte, and that is a point that must be considered much more carefully in our future studies of syphilis.

Dr. William L. Baum: Whether it is an anti-body or a toxin that we are testing for cannot be determined. We know that there are physiologic anti-bodies in every organism, and it would be for some purposes much more convenient to say that we are testing for a toxin, the result of activity of the spirochete. To me the side-chain theory has been a very satisfactory explanation for the reaction. The points brought out by Dr. Baumann are new to me. If we are testing for anti-bodies, why should we get a negative Wassermann when we know that no spirochetes are present? Dr. Baumann will admit that he has seen negative Wassermans in individuals in whose lesions spirochetes have been found. If that is true, we would expect to find active organisms present and get a positive Wassermann. Whether the failure is due to faulty technic is difficult to state, because the examination is a difficult one. I would think that the reaction is valuable, but not an infallible test. It may be good in a quantitative rather than in a qualitative manner. It has not nearly the significance in my eyes that has been given it by Ehrlich. A negative reaction is absolutely no indication, from

the therapeutic point of view, as to how much treatment a patient should be given. A negative reaction obtained every six months for a period of years in one who had syphilis years ago, but who now has no symptoms, would incline me to believe that he was cured of the syphilis. The more negative reactions accompany the absence of clinical symptoms, the more certain I would be of the absence of the disease. Therefore, a Wassermann, if negative, is, in a measure, a check on the ultimate treatment of the patient, but only after the lapse of a considerable period of time. It has a diagnostic value in old cases, and in old obscure conditions, when you get a strongly positive reaction in the absence of other signs, it is of much value, but even then the diagnosis should be qualified, for in many of these cases we cannot find any evidence of syphilis. However, it is probably as satisfactory a solution of the question in an individual case as can be hoped for, and the mere fact that they improve under treatment does not necessarily mean that the disease was specific. It certainly indicated a line of action which may be applicable to that particular case.

Dr. F. G. Harris: As to the significance of the terms antibody and antigens: A few months after Wassermann published his paper these terms were given up. It was conceded that the so-called syphilitic antigen is not an antigen in the true sense of the word, nor is the so-called antibody really an antibody. Whether we should turn the terms around and say that in the Wassermann test we are testing for antigens or for toxins is questionable, and cannot be settled by an *ipse dixit* statement. There are many arguments against such an hypothesis. For instance, it is well known that many of the lower animals give a positive reaction, and if we are testing for toxins, such substances would not be present normally in the lower animals. The fact that there are some tropical diseases that give a positive Wassermann reaction would be an argument against such an hypothesis.

The so-called antigen is composed of lipoids, but whether these are protective substances no one is prepared to say. If they are, what relation have they to syphilis? Normally there is no immunity to syphilis, nor does one attack of the disease confer immunity. Now we know that some organs, for instance, the heart, produce these substances which act as antigens, and we would naturally expect that an organ saturated with the protective substances would enjoy a certain immunity to syphilis, which we know is not the case as regards any organ or tissue of the body.

As to hemolysis. Dr. Baumann said a negative Wassermann reaction after the administration of salvarsan was due to the arsenic in the blood. In answer to that I would submit that comparatively few cases show a negative reaction following salvarsan. Especially is this true the older the infection of syphilis is. If in a case of secondary syphilis giving a positive Wassermann reaction we administer salvarsan, one would expect, if Dr. Baumann's statement was true, to get a negative reaction after from three to four hours, because then there is a maximum amount of arsenic circulating in the blood. As a matter of fact, that patient will still give a positive reaction for days afterward. Therefore, a negative test is not due to the arsenic, mercury or iodid *per se*, but is due to the fact that these medicines kill a certain number of spirochetes, so that there are not enough so-called antibodies present to bind the complement.

As to the variation in the amount of complement necessary in winter and summer: In the last four years I have made about 10,000 tests, but never noticed that the season had any influence in the amount of complement to be used.

As to the effect of heat on the antigen: I have not found that heat destroys its properties; in fact, I have, in making the liver extract heated the mixture close to the boiling point and the antigen still remained active.

As to the effect of temperature and time: If the test is done properly the influence of temperature and time, beyond certain limits, is practically *nil*. If the complement is all absorbed the test is positive and remains so until autolysis or bacterial hemolysis takes place.

Now, as to the value of the Wassermann reaction: It is being constantly discredited by the work of its incompetent friends. In a recent meeting of the German

Medical Society of this city, five cases of clinically manifest syphilis were demonstrated, four of which were reported as showing a negative Wassermann test. Reports such as these are what have brought the test to disrepute. I regard a positive Wassermann reaction as a symptom of syphilis. I regard it as the most constant symptom of syphilis and the most persistent. I expect a positive reaction in every case of manifest syphilis. I have never found a negative reaction in a case showing symptoms of syphilis, except once, a case with mucous plaques. This case gave a partial reaction, but there was not enough serum to make a proper test.

In my work I have endeavored to make the test more sensitive and more practical. I adhere closely to the original Wassermann technic. My modifications have been slight, and not in the principals of the reaction. The reason we have so many questionable results is because there has been a tendency to use some modification of the original Wassermann technic. The Noguchi reaction is not a bit more simple and not nearly as reliable as the original Wassermann. This is conceded by all European authorities and by most of the authorities in New York. The two reactions are not synonymous.

Another source of error is the complement. This is the keystone of the whole reaction. It is absolutely necessary that it be titrated before each test. Another mistake is to do the reaction with only one antigen. For more than two years I have been making the test with five different syphilitic liver extracts, varying in delicacy, so that it is usually possible for me to tell whether a given serum comes from a patient with manifest syphilis or one who has been under treatment. All of my antigens give a positive reaction in frank secondary syphilis. Two of them, with cases that have had prolonged treatment, give a negative or partial reaction. I consider it very essential that the test be made with more than one antigen. Another procedure which I think increases the delicacy of the test is that *in addition* to the usual positive and negative control sera, I use serum from cases under treatment. This becomes a more delicate criterion than just the serum from cases of frank syphilis.

Dr. Warthin cited a case of general paresis with a negative Wassermann. This is something I have never seen. If there is one disease that should *not* give a negative Wassermann, it is paresis.

Dr. W. T. Mefford: One factor of the greatest importance in the Wassermann reaction, to my mind, is a correctly working hemolytic system. I adjust my hemolytic system not to work in a shorter time than 10 minutes or a longer time than 15 minutes. When all the materials are added this will lengthen the working of the test from 15 to 30 minutes, and this time has given me the most correct readings and results. Many human sera have an amboceptor for sheep's corpuscles; this amboceptor does not work in union with the sheep amboceptor, nor does the excess of human amboceptor have any effect on the test unless an excess of complement has been added, or that the antigen bodies or products are not sufficiently strong to bind all the complement: the complement being bound by the antigen products the amboceptor in the human serum will not work to produce hemolysis of the sheep's corpuscles. A too strong sheep-rabbit amboceptor will withdraw part or all of the complement from the binding antigen bodies and you will get hemolysis even in a strong positive serum, and it is for these various reasons that a perfectly adjusted hemolytic system is of such importance in the working of the test. So far as the reaction being always positive in an active lues I must disagree with Dr. Harris. You will have clinical manifestations of active lues of the brain or cord and frequently get a negative reaction. It is in this class of cases that we must not disregard clinical manifestations because of getting negative Wassermann. It is in a hidden or unseen lues, when we get a positive reaction, that the test is the most valuable. Just why we get a negative reaction in known active lues occasionally, I cannot say, unless it is due to the poor vascular supply in the parts which are being invaded by the *Spirochæta pallida* and not a sufficient amount of the antigen products given off or thrown into the blood circulation. A negative reaction is of value in the treatment of lues; no treatment should be stopped as long as the reaction is positive, and

should be continued some time after the reaction is negative. A negative reaction is of value in differentiating certain local organic lesions. As a rule active visceral lues gives positive reactions; with specific treatments clinical manifestations disappear as well as positive reactions becoming negative would indicate a lues of whatever organ was affected. However if the symptoms in the diseased organ continued or progressed it would be an indication that the active lues was not the cause of this diseased organ and the lues probably located in some other parts of the body. As to whether an individual is ever cured of lues I am very doubtful; if one is cured, who and how can you tell which luetics are cured and who can tell when lues will become active again. Some well treated cases become active in a short time. Some poorly treated cases go many years without showing clinical manifestations. One individual gave a history of 25 years after the initial lesions before showing any clinical manifestations. This individual was treated a short time and pronounced cured. Another gave the history of 45 years after the initial lesions before showing any clinical manifestations; this individual was treated a short time and pronounced cured also. Each individual was beginning tabs at the end of these periods, and gave positive reactions. It is for the reason that we cannot tell who is cured and when the disease will become active again that one should continue treatments from year to year with an occasional Wassermann test, to govern the treatment.

Dr. Maximilian Herzog: Dr. Baumann made a number of statements. Some are not new or startling; others are new, but I think they are not correct. It has long been known that the Wassermann reaction is not an absolutely specific reaction, and that many antibodies behave like enzymes, in that they act within certain time limits at certain temperatures, etc. It is therefore not a startling fact that hemolytic complement should behave like enzymes, and this does not prove that it is not an antibody.

Then the doctor claims that the agency which acts in the Wassermann test is a toxin. It certainly would be a peculiar toxin which should behave like that. From what we know of the body it simply behaves like an amboceptor. Whether an amboceptor is an enzyme or not is another question.

I can add to what Dr. Harris has said concerning the Wassermann test after the use of salvarsan, that it is not true that the Wassermann test is soon negative after the arsenic compound. It takes sometimes a long time before the test changes to negative. I have seen cases that had three doses of salvarsan, and for months the test remained positive. The doctor also said that the test becomes positive in the presence of hydrochloric acid. It is a well-known fact that enzymes are sensitive to mineral acids, and when you use a serum not high in alkalinity and you add hydrochloric acid, there is an excess of acidity and you may get hemolysis.

In glanders, a disease much like syphilis, the complement-fixation test, used by veterinary serologists, is absolutely specific, because we must use a product of the glanders bacillus in order to get the antigen. The doctor has, it seems to me, not proved his point that the Wassermann reaction is not what it is supposed to be—a complement-fixation test.

Dr. William J. Butler: Dr. Baum maintains that the Wassermann reaction is of little value to the syphilographer, and Dr. Harris says that every time syphilis exists the reaction is positive. The syphilographer deals with syphilis in a different light from what we do. We see more syphilistics in the later stages, cases of paresis, tertiary and quartan syphilis. I agree with Dr. Harris that there is nothing more essential than accurate technic, and that many are doing this work who are not competent to do it. I am convinced of that from the frequency with which I hear of reports from different sources, announcing different results. However, with a full appreciation of the importance of technic, I want to say that Dr. Harris is overenthusiastic in his observations, unless he has confined them quite well to cases of syphilis that did not include the whole category of syphilis in all its stages. I think Dr. Baum's position is wrong. There is nothing of more value than the Wassermann reaction. There are cases without clinical manifestations in which the reaction is positive. If we accept Dr. Harris'

statement, untold harm will result to our patients, and I am convinced that the clinical view is the one that interests us the most, and is the one in which, unless you have a proper view of the situation, we will do harm rather than good in many cases.

We often examine cases of the quartan type of syphilis which give a negative reaction, and yet the patient has syphilis. He improves under antisyphilitic treatment. In the case of patients with skin manifestations, mucous membrane manifestations, and so forth, we get a positive reaction in almost 100 per cent., although every once in a while there is a case of manifest syphilis where it may fail. However, that is not the most important class of cases for the reaction.

I want to emphasize that the Wassermann reaction, when present, always means syphilis, but it does not mean that the thing which has attracted your attention, and which is not the important thing for the patient, does not mean syphilis. A negative reaction does not mean that the thing from which the patient is suffering is not syphilis.

Dr. F. O. Tonney: There is one phase of the subject, which I believe should be given further emphasis, especially in light of some of the rather unusual statements which have been made here to-night. I have in mind the very evident and urgent need of improvement in the technic commonly used in many cities of the United States. It is a deplorable fact that many questionable methods and unscientific details connected with the Wassermann test have found ready acceptance in this country, with the result that the test as it is commonly performed is probably not more than 50 to 60 per cent. accurate.

This to my mind appears to be due to two general causes: First, the test with its introduction into the United States has been very widely commercialized. While I do not wish to be understood as saying that commercial work is necessarily faulty, since there are unquestionably some thoroughly competent and conscientious workers engaged in this field, yet the statement in general holds true that in commercial work there is a distinct tendency to adopt short cuts in order to save time and expense, and that these short cuts often detract from the value and reliability of the test. Possibly, the acceptance of present methods has also been due, to a certain extent, to peculiarities in American temperament. The original test was elaborated by a German. The German as a type is a lover of technic, he is slow, accurate, painstaking and very patient. The American on the other hand is a lover of speed; his very impatience makes him prone to adopt with a blind confidence any procedure which promises to enable him to attain his object quickly. Unfortunately short cut methods, when applied to the Wassermann test are all too often possible only at the expense of accuracy.

The influence of conservatism, however, is now making itself felt. There is a distinct tendency among the better class of workers to go back to many of the details of the original Wassermann technic, to discard a number of questionable procedures and to adopt strictly scientific though more time-consuming methods.

This is as it should be. The Wassermann test is nothing if not exact. It is strictly quantitative; every ingredient used is variable; the system of units is upon a strictly relative basis; all parts must be in a state of balance quite comparable with that of the chemist's delicate quantitative scales. A seemingly trivial omission or commission may serve to throw the whole mechanism out of adjustment. The test calls for an infinite amount of care and painstaking attention to detail. If not done in this manner, it had best not be done at all, since erroneous conclusions as to the value of the test inevitably result.

We will have taken a long step forward when we make up our minds that we cannot safely omit the titration of complement and amboceptor prior to each test; that we cannot with safety cut short the incubation period; that when something goes wrong we cannot safely patch matters up by adding a little of this or that, but must begin all over again and titrate all the ingredients before setting up the test; that the drop method of measuring ingredients, so commonly used in this locality, is not sufficiently accurate for so delicate a piece of mechanism as the Wassermann test. The size of a drop, as the chemist will tell you, depends upon a number of factors, the specific gravity of the fluid, the size of the dropper,

the temperature and certain accidental influences, such as jarring or shaking and the presence of grease on the tip of the dropper.

Some of the more important improvements now being adopted are the replacement of the drop method by the pipette method, which is more scientific and gives greater assurance of accurate results; the adoption of a larger unit of volume whereby the inevitable inaccuracies in measurement become proportionally negligible; the use of high potency amboceptor having a titre of not less than 1 to 1,000, preferably higher. Furthermore, the original extract of syphilitic liver certainly seems to give a more serviceable antigen than the normal organ extract of Noguchi. The specific extracts are, therefore, coming more and more into use. Of these both the aqueous extract of Wassermann and the simple alcoholic extract are satisfactory. The simple alcoholic extract, however, is less subject to deterioration.

I feel that a plea for more general adoption of improved technic in the conduct of the Wassermann test is timely. Of the fact that there is urgent need for such improvement, there can be no doubt. In the meanwhile, until it is upon a more satisfactory basis than at the present time, it is not wise to draw hasty conclusions as to the limitations of the test in its relation to clinical syphilis, except in those instances in which there is certainty that the methods employed are above the possibility of reproach.

Dr. Adolph Gehrmann: The study of syphilis, tuberculosis and glanders has been without much result as to anti-body or antitoxin formation. That is not the way the body fights the invasion of these diseases. When patients do not recover there is an advancing spread of microorganisms in the body. When the disease lingers in a subchronic way, and the body gets to the point where it can throw around the spirochaetes or other bacteria a wall and cut them off, there will be recovery, otherwise not.

As regards the technic, there has been drawn into the discussion more than is demanded. It is very difficult to start out at this moment and make a Wassermann test and be sure of what you are doing. The only way to get reliable results is to do one test after the other, and use the work of the last for the next, working one test in with the other at the time, otherwise you must make elaborate preparations before you can begin.

Dr. Thomas L. Dagg: We employ Noguchi's method in the Chicago Laboratory. It averages as well as any best employed to-day. We use human blood amboceptor and we standardize it accurately, likewise the antigen. We use the 50 per cent. alcoholic syphilitic liver extract, as it does not lose its antigenic properties if kept at or near the freezing point. In doubtful cases we control it with the watery extract. We use a 5 per cent. suspension of blood corpuscles, according to Noguchi, taking one drop of the blood to 5 c.c. of the normal salt. The blood suspension used had better be made freshly every day. Noguchi says it is best after twenty-four hours, but we do not find it that way. It seems to hemolyze too readily, therefore we make a fresh suspension every day. I use a small capillary pipette, and the total quantity of complement used is two drops from this small pipette. It is the least variable of any of the factors. Two drops of antigen and two drops of complement are mixed with four drops of the suspected inactivated serum, in 1 c.c. normal salt solution and the mixture incubated for one hour at 37 C. Then 1 c.c. of blood suspension and 2 units of amboceptor are added, and this is again incubated for two hours and then placed in the ice-box over night.

From my experience in the Wassermann work, I have been impressed with the apparent ease with which syphilitic infection might be conveyed. As examples, one patient, a young girl had a primary infection of the cheek, the result of an abrasion with a dental instrument. In another case a musical instrument conveyed the infection causing primary lesion on the lip; and numbers of doctors and dentists infecting their fingers in their professional work.

I believe that the Noguchi method has many advantages over the original Wassermann, principally because it is a more practical one, in that we have human blood to work with all the time. It is not convenient to have to use sheep's blood.

I might add in conclusion that we are now studying comparative results with Noguchi's acetone insoluble lipoids as an antigenic factor, and if found practical will adopt it as a routine.

Dr. Baumann (closing the discussion) I reported in my paper the results of scientific experiments made more or less separately from my routine work with the Wassermann serum reaction. I have not described the technic of the Wassermann reaction, nor have I tried to modify the technic of this reaction. I am, therefore, surprised to see the discussion confined almost exclusively to points which have no connection with my paper. I am surprised at this apparent degeneration of the discussion into a meeting for the advancement of extraneous motives.

With the exception of Dr. Warthin, none of the gentlemen taking part in the discussion seem to be able to grasp the contents of my paper and discuss it.

I will give credit to Dr. Harris and Dr. Herzog for their endeavor to discuss some of the points brought out by my paper, and I regret exceedingly that I am forced, in spite of myself, to the conclusion that their scientific medical training did not prevent them from falling into the trap set for the unsuspecting physician by our drug manufacturers. But at the same time I seriously object to the suggestion that these gentlemen should be held personally responsible for their lack of scientific training. The fault lies with our medical teaching and our medical literature. It is business in the guise of medical science which, as a logical sequence and of necessity produces such men.

This is all I have to say in response to Dr. Herzog's expostulation, and in reference to Dr. Harris' idea about immunity and lipid substances in the syphilitic infection.

As to the Wassermann reaction being positive right after the injection of "606," I would like to inform Dr. Harris that the amount of arsenic administered in a full dose of "606" is about sixty times the average dose of arsenic, and that this is possible only because the chemical activity is carefully bound, and it takes the human body time to disassociate arsenic from the compound salvarsan.

The merits of Dr. Harris' experiments with antigen and complement I will not analyze. I leave it to the future to show if these experiments are any credit to their author.

As to Dr. Harris' statement concerning the case of general paresis of Dr. Warthin, I should say that I have had at least a dozen cases of general paresis at the Detention Hospital which gave such slight reaction as to come under the negative cases. I will state further that I do not know if I made ten thousand Wassermann tests; in fact, I do not think I did, but I know that I am making at the present time three to four times as many tests as anybody here to-night. When I first started, about two and a half to three years ago, to make the Wassermann at the Columbus Laboratories, we had about one test a month, and to-day I am making ten to twenty tests daily.

ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF THE ILLINOIS STATE MEDICAL SOCIETY

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APRIL, 1912

THE CANDIDATES FOR THE NOMINATION FOR GOVERNOR REPLY TO OUR QUERY AS TO HOW THEY WOULD TREAT THE STATE BOARD OF HEALTH PROBLEM

As is well known to all our readers, the state-wide primaries to nominate candidates for the office of Governor, and other state officials, as well as representatives in the Legislature, and United States Senate, will be held Tuesday, April 9. For the first time in this state, every citizen will have the opportunity of expressing his individual preference as to the men whom he wishes to have stand for the office in question. Without doubt the medical profession will have much influence at this critical period. The profession has rapidly awakened to the reality of the disgraceful conditions which have prevailed for many years, and we are badly mistaken if they fail to make their influence felt, especially when it comes to the matter of selecting a candidate for Governor. the official who has the appointment of the State Board in his hands.

In order that the members of the State Society may be informed as to the attitude of the various candidates, on the State Board of Health reorganization, we addressed the following letter to all the candidates, with two exceptions. A copy of the letter was sent to Mr. West, campaign manager for Mr. Deneen, but no acknowledgment has been received from him. No copy was sent to Mr. Yates or his manager.

Several of the candidates to whom the letter was sent have not answered. One of these, Mr. Jones, is represented as saying: "I have found the doctors all over the state opposed to the State Board of Health, as constituted at the present time and held in office by Governor Deneen." Furthermore, we understand that the doctors of Kankakee County are sending out circulars in the interest of Mr. Small, based largely on Governor Deneen's failure to properly organize the State Board of Health. A number of medical societies have adopted resolutions demanding that the Governor re-organize the State Board of Health.

Mr. George P. Englehard of Chicago, is a candidate for the nomination of Congressman from one of the city districts. This gentleman should be forgotten by medical men. He is an active member of the League for Medical Freedom.

First we reproduce our letter, and this is followed by the answers received in alphabetical order of the name of the candidate.

Dear Sir:—On behalf of the organized profession of the state I take the liberty of addressing you to ask whether you favor the reorganization of the State Board of Health, in the event of your election to the office of Governor, to which I understand you aspire.

It may not be known to you that this Board was organized in 1877, after prolonged agitation on the part of the State Medical Society had created a demand for a department to care for the lives and health of the people by securing better education of physicians and sanitary laws on the statute books. For many years the Board carried out the purpose of the act under the late Drs. Rauch and Reilly to the great credit of the state, and the great benefit of the people. But for many years the Board has been a figurehead medically, and to a large extent a political asset of the Governor in office.

The present secretary has used the office for political purposes until he has completely lost the confidence of the medical profession. He now claims to have ensconced himself under the civil service act. Notwithstanding prolonged efforts of some of the best men of the state, it has seemed impossible to bring about a much needed change in this department.

We believe that there is no department of state government which if properly and energetically conducted would be so beneficial to every individual of the state. While this board is of special concern to the medical profession, on account of the subjects with which it deals, its practical work in medical education and in introducing proper sanitary and hygienic control throughout the state, if properly administered, is a protection to every citizen.

Your reply will be printed in the April issue of the ILLINOIS MEDICAL JOURNAL and reach nearly 6,000 physicians.

Hoping for an early reply, I am

Yours very truly,

March 24, 1912.

To the Editor:—I am in receipt of your letter of the 20th inst., representing certain conditions which you allege to exist in the State Board of Health, and asking me whether I favor a reorganization of the State Board in the event of my election as Governor.

I am sure you would not expect me to answer your question definitely without having had opportunity to investigate the charge you make. I have no specific knowledge on the subject matter and can only state generally that if elected Governor I would not only try to do my duty, but would, so far as lay within my power, require others connected with the government to do theirs. I know of no reason near or remote why I should be any more tender footed or mealy mouthed on the subject of the State Board of Health than in respect to any

other board or department of government, but you will appreciate the fact that it would not become me at present to state specifically what I will or what I will not do. If elected I will of course be glad to give careful consideration to any complaint that may be made.

Yours very truly,

SAMUEL ALSCHULER.

VANDALIA, ILL., March 25, 1912.

To the Editor:—I have your communication of March 23 with reference to the organization of the State Board of Health. In reply would say that if elected Governor of the state of Illinois it shall be my purpose to attempt to render each and every board organized under the laws of the state of Illinois efficient. I shall endeavor to effect in so far as possible the carrying out of the purposes for which the board was established. The State Board of Health shall be no exception, and in so far as it is possible under the laws of our state, I shall endeavor to intelligently organize this board so that it may bring about the most beneficial results to the whole people of the state of Illinois, and in so far as that may be advantageous to the medical profession in the interest of the enlightened, honest, and active progressive members of the medical profession in this state, and before doing anything will advise with the leading members of the profession.

If elected Governor of this state, I shall not organize the State Board of Health or any other board on a basis of political advantage to myself. I have announced publicly that if elected I shall not ask for reelection at the close of my term; that I believe it to be to the advantage of the whole people of the state that the man who holds the office of Governor of this state be free from any temptation to build for himself a political machine for reelection, and consequently I have pledged myself in advance not to ask for renomination or reelection. This leaves me free to carry out honestly and intelligently the duties of the office without fear or favor, and will leave me free to give the same honest and intelligent attention to the organization of the State Board of Health as to any other department of the state government.

Very truly yours,

JOHN J. BROWN.

March 25, 1912.

To the Editor:—In answer to your letter of the 28th instant, would state that I have not had the opportunity to inquire into the efficiency of the present secretary of the State Board of Health or its officers. If elected governor I shall take occasion to do so and will give the State Medical Society full and fair hearing before I take any action in relation to reappointment or retention of the present officers. If any of the officers of the Board have been "using the board for political purposes" I certainly will not reappoint them. More than this, as at present advised, I cannot say.

Very truly yours,

E. F. DUNNE.

SPRINGFIELD, ILL., March 26, 1912.

To the Editor:—In reply to your letter of the 20th inst., wherein you ask "whether you favor the reorganization of the State Board of Health," I am pleased to state unhesitatingly that I do.

I believe that this board as much, and perhaps more than any board in the state, needs an entire overhauling, and it should be absolutely separated from machine politics.

If I am elected governor I will select for members of this board the very best physicians in the state, in considering *only* fitness for the position to be filled, and will view applicants from no other viewpoint. I will attempt to make this board such a one as the law enacting it contemplated. I am, Doctor,

Yours very truly,

BEN F. CALDWELL.

March 28, 1912.

To the Editor:—Your favor of the 20th at hand, and if elected Governor, I will appoint a Board of Health that will represent the very best and highest elements of the medical profession of the State of Illinois.

Yours very truly,

LEN SMALL.

SYMPOSIUM ON DISEASES OF THE EYE

We call particular attention to the Symposium on Diseases of the Eye and Prevention of Blindness, which was held in Chicago Feb. 8, 1912, under the auspices of the Chicago Women's Club, South Side Branch of the Chicago Medical Society and the Chicago *Tribune*. Dr. Thomas A. Woodruff presided at this meeting and gave an excellent address outlining the status of the subject, and the remarkable fact that Illinois in this, as well as in many other sanitary and health lines, is far behind the other populous states of the Union.

In Ohio we understand the state has in its employ a graduate of the Institution for the Blind, who is delivering lectures on the Prevention of Blindness, in every county seat and school district of that commonwealth. It is high time that the whole state of Illinois was arousing itself to activity in this very important matter, and there is no doubt that an intelligent effort in the next ten years would decrease the cases of blindness at least 50 per cent. A large part of the responsibility of prevention of blindness results with the medical profession. A part of this is due to the ignorant midwife, who should be placed under better control, and a good part of it is due to the indolence of the medical profession in not taking hold of the modern methods of treatment of infantile ophthalmia. We call particular attention to this symposium, and trust it will be read by every member of the state society.

MEDICAL EXPERTS AND MEDICAL EXPERT TESTIMONY

Probably no department of professional activity so much needs regulation as that of the appearance of the profession in the courts of justice. Our professional brethren of St. Louis have taken this matter up, appointing a committee to consider the matter, the head of which is our old friend and schoolmate, Dr. F. R. Frye, professor of neurology in the medical department of Washington University. The report of this committee covers the matter so thoroughly that we have thought it well to bring it to the attention of our readers, and hope it will lead to some action in every county society in Illinois.

GRADUATE SCHOOL OF MEDICINE AT HARVARD UNIVERSITY

The Harvard Medical School of Boston announces that on and after Oct. 1, 1912, all graduate instructions in medicine will be administered in a department under the faculty of medicine, thus placing it on the

equality with the medical school proper, and the dental school. This is not exactly a new enterprise, as graduate teaching has been carried on at Harvard for years. The growing demand for such instruction together with the appreciation of great benefit of such an opportunity to the profession and to the public leads to this plan of a more systematic organization and great development of this work. This is the first time in this country that the development of graduate medical teaching has been undertaken on university basis. No doubt the profession of the entire country will be interested in this enterprise, and give it the enthusiastic support which it deserves.

EYE, EAR, NOSE AND THROAT SECTION OF THE ILLINOIS STATE MEDICAL SOCIETY

This section, as indicated in our March issue, has been fully organized, and begins its work with a banquet on Tuesday evening, May 21, in the sun-parlors of the New Leland Hotel, Springfield. The plan is to organize the section during this dinner. Wednesday will be devoted to the scientific program, and Thursday will be given over to clinics held at St. Johns and Springfield hospitals. It is anticipated that fifty or sixty specialists in this line will attend the banquet, and of course all members of the profession will be welcomed to the scientific program and the clinics to follow. It is evident that the time has come to recognize the specialists more fully in the work of the state society, and we believe that this move will be very profitable and popular.

THE SPRINGFIELD MEETING

Amid all the press of political excitement and the stress of practice we hope our members will bear in mind the annual meeting of the State Society, which will be held in Springfield, May 21, 22 and 23. The meeting, as all meetings at the capital have been in the past, promises to break the records in attendance and interest. A glance at the preliminary program printed in another column, indicates that the scientific treat will be well worth while. Dr. S. A. Knopf, of New York, the foremost man of all the world in combating the great white plague, will deliver the address in medicine, and Dr. Dudley P. Allen, of Cleveland, the oration on surgery. We understand there will be a valuable symposium on that live topic, the modern treatment of fractures. The new section on diseases of the eye, ear, nose and throat have also arranged for a program, which will be found interesting both to the specialist and the general practitioner.

A program of entertainment for Wednesday night will include vaudeville at a high class theater, and a band concert, reception and dance at the Leland Hotel. Many will come in autocars, for which ample garage room will be found near the headquarters.

Forget your troubles, forget your case,
Remember the date, remember the place.
Come by the dozen, come by the score,
And boost the society for one year more.

THE PATIENCE OF THE PEOPLE

"Is there any other intelligent people so long-suffering as the American people? All sorts of humbugs — fake patent medicine, fake doctors, fake religions, fake investments flourish here as perhaps nowhere else on earth. And our people just laugh at themselves and go on being humbugged. Alas, my masters, where is it goin to end?"—*Northwestern Christian Advocate*.

A DOCTOR'S O. K. BEFORE YOU WED A MOVE IN THE RIGHT DIRECTION AS SUGGESTED BY DEAN SUMNER



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MARRIAGE OF THE UNFIT

Dean Walter T. Sumner of the Episcopal cathedral of SS. Peter and Paul, located in the Chicago West Side red light district, has stirred up a tempest by announcing that no more marriages will be celebrated at the cathedral beginning Easter Sunday unless the would-be bride and groom present physicians' certificates of health. Bishop Anderson and

the clergy of the cathedral are said to concur in his ultimatum. This ought to receive the endorsement of the enthusiasts for eugenics who are agitating this question both in medical and social circles. Doubtless Dean Sumner's experience as a pastor in that district and especially as chairman of the Chicago Vice Commission convinced him that radical action was necessary to stem the stream of vice and crime at its source. As was to be expected his announcement was received with varying emotions. The more conservative ministers thought that the subject was one for the State to control; others endorsed the plan enthusiastically. Rev. Johnston Myers opposed the idea. As quoted in the *Chicago Tribune*, he said: "Would you let a doctor examine you or your sweetheart as cattle are examined before they breed? Of course you wouldn't. The whole thing is silly, absurd. If any man is diseased and is refused the sacrament on that account, let him come to me and I'll marry him."

Perhaps some of the physicians who feel that their income has been impaired by the general activity in public health work lately will now open Wassermann laboratories and get ready for the rush for Sumner certificates. Rev. Myers' choir will please practice that fine old hymn, "Oh, what will the *harvest* be?" Another point to be considered in restricting marriage is the output of illegitimate children, which in Paris amounted to 38.7 per cent. for 1904-1908, as published in the official statistics in 1909. This is said to be largely due to the excessive amount of red tape necessary to secure a license to wed. The difficulty of securing legislation to restrict marriage of the unfit will probably leave the subject for some time to come to such voluntary effort as enlightened reform may accomplish by education. Dean Sumner deserves the endorsement and encouragement of the medical profession. Probably the Indiana plan of sterilization in selected cases could be used to prevent our having the French experience in the matter of the illegitimate.

THE NATIONAL LEAGUE FOR MEDICAL FREEDOM AND THE HOMEOPATHIC SCHOOL

(*From the North American Journal of Homeopathy*)

The National League for Medical Freedom has welcomed all the motley throng of medical discontents of whatever fad or ism as fish to their nets. There is every reason to believe that the Christian Scientists are affording the chief financial and moral support to the opponents of the Owen bill. Senator Works recently delivered a two or three hour harangue on the bill, and his speech was printed in full by the *Christian Science Monitor* of Boston and widely distributed. Senator Works is well known to be a Christian Scientist, and his wife is said to be a Christian Scientist practitioner. The pedigrees of the principal men active in the League have more than once been published in the *Lancet-Clinic*. For some time this league has attempted to enlist the homeopathic school in their support. A few isolated homeopaths have openly supported the purpose of the league. Only one homeopath of any eminence has engaged himself in active opposition to the Owen bill. This

man is Dr. Crutcher, who recently spoke in Cincinnati for the National League for Medical Freedom. It is not unfair to say, however, that the eminence with which we have credited this gentleman has been acquired through these activities. Prior to his fame acquired as an "eminent lecturer" for the league he was a more or less obscure practitioner of Kansas City. The league has frequently attempted to spread the impression that the homeopaths as a school are in sympathy with their aims. This is certainly not the case. All the homeopathic journals except one have remained cold to the warm advances of Fowler and his crew of Christian Scientists and other medical malcontents and antis, this or that.

The general point of view of the homeopathic school is set forth in a vigorous letter published last week in *The Journal A. M. A.* It is an excellent statement of what the homeopathic standpoint should be.

A friend addressed Dr. DeWitt Wilcox, of Boston, and attempted to enlist his aid in opposition to the Owen bill. Dr. Wilcox replied by letter, as stated. He said in part:

My conclusion is that the more I learn of the League for Medical Freedom the less use I have for it, and the deeper is my conviction that it is at the bottom a thousand times more selfish and self-seeking than the American Medical Association ever dreamed of being. I believe that the instigators and framers of the League are infinitely less for the welfare of the "dear public" and its physical protection than any body or set of men who ever banded themselves together. I am of the opinion that the League was conceived in selfishness and born for that single purpose. It goes without saying that there are many excellent men like yourself who are members of the League, but all such have been drawn into its meshes by the sophistries and false pretenses put forth to catch the unwary. They need you good people for just one purpose, namely, to get their chestnuts out of the fire, which chestnuts—"patent medicine," impure foods and drugs, fake methods of practice, and many other money-making humbugs—are in danger of being destroyed.

If the Owen Bill threatened one-tenth the danger to the public welfare which the real animus of the originators of the league threatened, then I would say "fight the bill to the finish." Just consider a moment, my dear doctor, what the league stands for as represented in Senator Works' speech. It seeks to annul or belittle all the great discoveries made in medicine during the last fifty years. It practically wipes out the germ theory of disease. It would abolish all public health boards. It would not insist on quarantine of infectious diseases. It would terminate at once all public school medical inspection. It would prohibit compulsory vaccination. It scoffs at typhoid protection in the army. It would only too gladly wipe out all restrictions on pure foods, drugs and medicines. It would annihilate animal experimentation *in toto*. To be sure Senator Works does not say all this in so many words, but it is there and easily read between the lines.

* * * If we of the Homeopathic school are so afraid that the dominant school will legislate us out of existence that we must call to our aid the medical quacks, the "Christian Scientists," the poison food squad, and all other medical sore heads, then, I think, it is better that we die a respectable death and have a decent burial. For my part I would rather be licked fighting honorably with honest comrades than win by the aid of Hessians. This "League for Medical Freedom" is not our fight; it is the sorcheads' fight.

If there is not enough truth in homeopathy and stuff enough in her followers to stand such legislation as is proposed in the Owen Bill, then she deserves just such an ignominious death.

The above appeared as an editorial in the *Lancet-Clinic*, Jan. 6, 1912. The following, contributed to the *Pacific Coast Journal of Homeopathy* by Dr. Francis B. Kellogg, of Los Angeles, throws another spot-light on the constitution and workings of the National League for Medical Freedom:

Dr. Crutcher denies that any attempt was made to secure the endorsement of the American Institution of Homeopathy at Pasadena. I happen to know that such an attempt was made, for I was myself approached on that occasion by the secretary of the local branch of the league, who attempted to enlist my efforts to secure such endorsement. I could not understand why this somewhat prominent layman should take such an active interest in the equities of the medical profession. I asked a relative of his, who is an old school physician, if he could enlighten me. He laughed at me. "Why, don't you know," said he, "that Mr. N. is one of the pillars of the Christian Science Church?" This first opened my eyes to the fact that the homeopathic school was being used to pull Christian Science chestnuts out of the fire. This is only one of a number of similar experiences, since crowned by Senator Works' speech in the Senate, all going to establish beyond a doubt the substantial correctness of my assumption.

Let me say that I have no argument against the individual right to believe in and to practice Christian Science, but let there be no mistake; the Christian Science Church is opposed not only to medicine (and here is the rub), it is—and logically—opposed to the prevention of disease wherein the hope of humanity rests for deliverance from the ills of the flesh. It would use the homeopathic school or any other means to block the wheels of progress along this line, and it is doing it by going into politics.

Through this same League for Medical Freedom it defeated the bill in the last Legislature providing for the more effective physical examination of school children, the only aim of which was to remove the physical and mental obstacles from the pathway of suffering childhood.

Correspondence

HISTORY OF A NOTED SUIT FOR MALPRACTICE; COMPLETE VICTORY FOR DR. MAMMEN OF BLOOMINGTON

To the Editor:—Permit me briefly to report a history of the case, *Smith v. Mammen*. Suit for malpractice, \$5,000.

The operation was performed July 31, 1909. It was for a right fallopian tubal pregnancy which had ruptured into the lower right quadrant of the abdomen. There was profuse cervical discharge, so that it was thought best to curet the uterus. After the curettement, a strip of gauze about an inch wide was packed into the cavity of the uterus, and allowed to hang down into the vagina. A bunch of gauze was packed around the posterior part of the cervix, then the position of the patient was changed and the abdominal operation was performed in the usual manner. It was noted that a fecal mass was impacted in the cecum. The fetus and membranes were apparently in a state of beginning sepsis, the nurse's record showing elevation of temperature for several days. Hence a drainage tube was inserted into the lower angle of the wound.

During the abdominal operation, gauze sponges were used, about 4 inches wide and 20 to 22 inches long, having a tape sewed on the end, to which a clamp was attached. During the operation these sponges were counted as they were used, by one of the nurses and again counted after the operation. None was found missing. Before the patient left the operating-table her stomach was washed out, and between 3 and 4 ounces of castor oil poured in with a view of loosening up the impaction in the cecum. My assistants during the operation were Drs. Rhodes and Hart, Dr. Chapin giving the anesthetic. One nurse took care of the sponges and another of the instruments. Patient's own nurse, Miss Charles, remained in her room to prepare the bed for the reception of the patient.

After twenty-four hours the drainage tube was removed from the abdominal wound and another inserted. This remained another twenty-four hours. A light gauze drain was then used to replace the tube. This was left out after another day, when the wound healed up. However, the patient developed a slight temperature and about the ninth day, the lower angle of the wound was reopened and a quantity of pus was evacuated by means of a glass tube. The temperature now fell to normal. Drainage of pus ceased. In a few days the wound healed. The patient's temperature remained normal. Her recovery was complete the twenty-first day after the operation and with the exception of the few days after her return from Fairbury she has remained in good health to this day.

She remained in the hospital until the 25th of August, twenty-five days after the operation, when she left to visit friends in Fairbury, Ill. A very important factor in this case is that the nurse was instructed to remove the vaginal packing, twenty-four hours after the operation. She wrote the order on her record, and a little farther down she wrote, "Vaginal packing removed." I trusted the correctness of her statement. During the patient's stay in Fairbury, she partook of a liberal diet, and her constipation returned. One day she was seized with severe cramps, and decided to return to her home in Bloomington. She was accompanied by her former nurse, Miss Charles. A few days after her return, according to her statement, she passed a sponge into a jar, unaccompanied by fecal matter. The nurse found the sponge in the jar and exclaimed, "Oh! Here is a Brokaw Hospital sponge." A few hours after this the patient had copious evacuation from the bowels.

The nurse had stated that the sponge was a Brokaw Hospital sponge. The patient declared that it came from the rectum. The husband took the sponge, carried it with him and exhibited it to several law firms who declined to take his case. However, the firm of Stone and Oglevie became willing and anxious victims (as the sequel shows) to bring a suit in which so important an exhibit could be produced as a gauze sponge. Its size was about 6 inches square.

About this time, February, 1909, there was published in the *American Journal of Obstetrics* an article by Dr. H. S. Crossen of St. Louis, in which he tabulated several hundred cases of foreign bodies left in the abdomen during operations performed by various operators within the

last fifty years. A copy of this journal was handed to the lawyers by one of our Bloomington physicians. They read the article and so found the greatest encouragement for this lawsuit. The writer of the article had not intended that it should be used for such a purpose, but it served to bring serious trouble to the defendant.

When the case was put to trial the nurse and the patient both testified that this sponge came from the rectum. The testimony of the nurse was objected to on the ground that she could not know where the sponge came from, since the first she saw of it was in the jar. However, the court admitted her evidence. It was this very evidence which caused the appellate court to remand the case after the second trial. The first trial resulted in a verdict against me for \$1,500. Numerous errors were alleged and the court granted a new trial. In this trial the nurse's evidence in slightly modified form that the sponge came from the rectum was again allowed to stand over the objections of my attorneys. The second trial resulted in a verdict of \$2,400.

The third trial resulted again in a verdict of \$1,500. In each case it was evident that the nurse had only removed a portion of the vaginal packing, forgetting the most important part, the shape of which I did not know at the time of the operation. It was placed by the nurse bunched up, between the open jaws of dressing forceps with which I packed it into position. So I was unable to testify that the square of gauze which plaintiff's attorneys were industriously flaunting in the face of the jurors was the same sponge which I packed into the vagina. However, the positive testimony of the nurse that she removed only a strip of gauze, left no other conclusion than that this square was the piece packed behind the cervix. After the operation of curetting all instruments and sponges used for that were placed on a table and pushed out of the operating-room. The two nurses, two doctors and myself testified positively that no sponges of the shape exhibited to the jury were used in the abdominal operation. All of this evidence was utterly disregarded by the jury. It would seem as if the trial judge should have understood that the only evidence for the plaintiff was her own statement and that the verdict was each time contrary to the evidence.

It should be noted that each jury was prejudiced. The this prejudice seems to be evident from the manner in which the case was tried. Each time after the evidence of the plaintiff was before the jury, the court allowed hypothetical evidence which had not yet been produced. Expert testimony from a physician from Champaign, in another trial a physician from local physicians were put on the stand immediately after the nurse to answer hypothetical questions as to the sponge being inserted into an abdominal wound and finding it in the rectum. Of course affirmative answers had to be given to the questions proposed in the questions. There is no doubt why the verdict was against me three times. Why a

expert evidence on something that at the time has not been mentioned in the evidence is hard to understand. Surely the ways of the courts are mysterious in the cause of justice!

The appellate court sums up the case admirably.

The following are extracts from the decision of the appellate court after third trial:

EXTRACTS FROM DECISION (APPELLATE COURT, AFTER THIRD TRIAL)

Numerous grounds are urged by the appellant why this judgment should be reversed, alleging errors of the trial court in the admission and rejection of evidence, in the giving and refusing of instructions, and in the denial of motion to direct a verdict. From the conclusions that this court has arrived at, it is unnecessary for us to determine the errors assigned upon the admission and rejection of evidence or the refusal and the giving of instructions, except the one to find the defendant not guilty.

There is virtually no dispute in the evidence as to the condition of appellee before the operation, or that the operation was necessary to save her life. No one was present at the operation but Dr. Mammen, the appellant, Dr. Chapin, Dr. Rhodes, Dr. Hart, Miss Bolles, now Mrs. Strubhar, and Miss Hopping, now Mrs. Diers. The testimony of all these persons is that no sponge of the size or thickness of plaintiff's exhibit "A" was used in any manner in connection with the abdominal operation upon appellee. The testimony of Mrs. Strubhar is that she counted the sponges, both before and after the operation. Mrs. Diers also testified that the sponges were counted both "in" and "out" by Mrs. Strubhar and that she had entire charge of handling them. These witnesses all testified that after the operation of eurentement the eul-de-sac and the uterus were packed with sponges, that one long sponge was packed in the uterus and was left protruding from the vagina, that this sponge consisted of long, narrow strips of gauze sewed together. Upon the question as to where the sponge found in the slop jar, being plaintiff's exhibit "A," came from at the time it dropped into the slop jar, plaintiff is wholly dependent upon her own testimony and unless it can be said that her sole testimony together with the circumstances and conditions shown, establishes the allegations of her declaration, that this sponge was left in the abdominal cavity at the time of the operation, and that she passed it from her rectum while on the slop jar, then this judgment cannot be permitted to stand. The testimony of Miss Charles, the nurse, does not disclose where the sponge came from, and all proper evidence that she could give regarding it was the circumstances and conditions as she noticed them. Plaintiff ordered a great number of physicians and surgeons as expert witnesses for the purpose of showing that a foreign substance, such as a sponge, if left in the abdominal cavity, might, and, under certain conditions, the tendency would be that it would become encysted, slough through the wall of the rectum and pass out of the rectum; upon the question as to whether this might or would happen, there is no dispute in evidence; all the doctors who testified upon this question seem to agree that such a condition might be brought about, and that upon cross-examination that with the conditions that this record discloses, that a tube left in the abdomen by Dr. Mammen for drainage, and a foreign substance could have been left in the abdomen at the time of the operation. These facts, taken with the uncontradicted testimony on the part of the doctors and two nurses, that no such sponge was used in the operation, and that other sponges than the one which was left protruding from the vagina were used in packing the eul-de-sac and between the uterus and the rectum for the purpose of absorbing any secretions and for keeping the womb in position, with the testimony of Mrs. Diers in charge, that when directed to remove the packing she did not remove anything excepting the one sponge which was found in the slop jar, forces us to the inevitable conclusion that the sponge found in the slop jar came from the vagina of appellee.

A careful examination of the testimony of these experts can only lead a reasonable mind to the conclusion that this sponge was not left in appellee's abdomen by appellant or those who assisted him in this operation . . .

While it is ordinarily the province of a jury to determine the question of fact, and while the vital point in this case and the right of recovery depends wholly upon a question of fact, the jury must determine that fact in accordance with the weight of the evidence, *and if they utterly disregard the weight and preponderance of the evidence, then it is the duty of the court to set aside the verdict.* Without considering the question of the expert evidence in this record, we find that the evidence of the plaintiff is completely refuted and contradicted by the testimony of the four physicians and two nurses who saw the operation, and there is no reason, so far as the record discloses, why her testimony should be given any more weight than that of the other witnesses who testified in regard to the conditions that are shown to exist, and from the evidence in this record it is more reasonable to arrive at the conclusion that the plaintiff is mistaken in her conclusions as to where this sponge was passed from than it is to arrive at the conclusion that the testimony of these four doctors and two nurses is wilful perjury. . . .

The evidence of the four physicians and the two nurses that no such sponge was used in the abdominal cavity or in the operation connected therewith, in connection with the testimony of the expert physicians that in their opinion, if this wound healed after the insertion of the tube and the withdrawing of the pus on the ninth day after the operation without any further infection or indication of a septic condition, then no foreign substance was left in the abdomen is so clearly against the finding of the jury that we are compelled to hold that the jury *did not carefully weigh and consider the whole evidence*, and to hold that the verdict and judgment are *contrary to the evidence*, and must be set aside, and the clerk of this court will enter in the judgment herein a finding that the appellant is not guilty of the charge of negligence made against him by appellee in her declaration.

The judgment is reversed.

The above would seem to be a sweeping decision, but plaintiff's attorneys, still obsessed by the chimera of the sponge and the demonstrations of Crossen's article, applied to the supreme court in a petition to review the evidence. This petition was denied.

In this connection I take pleasure in acknowledging my obligation to all members of our noble profession who gave freely of their time and advice and their evidence. Very truly yours, E. MAMMEN.

Blomington, Ill., March, 1912.

MORE FACTS CONCERNING THE INSTITUTION WITH WHICH PROFESSOR CRUTCHER OF THE LEAGUE OF MEDICAL FREEDOM IS CONNECTED

To the Editor:—In your February issue you failed lamentably to appreciate the exceptional position occupied by the Kansas City Hahne-mann Medical College. This institution is probably without a peer in America, if not in the world. It has seven professors of materia medica and an equal number in anatomy and surgery. The principles and practice of medicine are honored by eight professors, although a footnote states that one of the number is dead.

In looking over the list of the faculty it seems difficult to believe that anyone residing anywhere near Kansas City, Mo., or Kansas City, Kan., could by any possibility have escaped a professorship.

A dead man is published as president of the institution, although it is pleasing to note that a vice-president, a secretary, a dean, a register and a treasurer survive.

The announcement assures us that "there is a great and ever-increasing demand for homeopathic doctors," which ought to make pleasant reading for those who like that sort of reading. We are further assured that the "strength of the future physician depends largely on the knowledge received before entering the medical college."

It is further observed that "several years in the university are desirable."

In justice to the institution, I hope you may find space in your columns for this communication.

PHYSICIAN.

ANOTHER QUERY: A CHICAGO SCHOOL

BROCTON, ILL., March 21, 1912.

To the Editor:—Reading the article of John Burke, Cicero, Ill., in the March JOURNAL, it calls to mind the Chicago College of Medicine and Surgery of Chicago, now the Medical Department of Valparaiso University, Indiana, which is said to give the first two years at Valparaiso, Ind., and the other two years at above college in Chicago. A student entered this institution last September; he was not a high school graduate, only held a second grade teacher's certificate in Illinois; said he entered clear as to his preliminary education, and would finish the course and graduate from said college in four years. How about this school?

Respectfully, H. C. KERRICK, M.D., Brocton, Ill.

CHARITY AND TUBERCULOSIS

To the Editor:—Sometime during December, the United Charities of Chicago called the attention of the Chicago Tuberculosis Institute to the problem of indigent tuberculosis patients who asked to be sent South and West. Many applicants come to the United Charities with letters addressed "To Whom It May Concern," etc., the letter stating that the bearer of it has tuberculosis and needs to go to another climate, and asking contributions toward the payment of carfare.

The remarkable thing about it is that in many instances these letters are signed by physicians. That this practice is not limited to Chicago is shown from the fact that recently a letter was received by the secretary of the Illinois State Association for the Prevention of Tuberculosis, from a town in Illinois, asking the Illinois State Association to help send a patient to New Mexico.

The United Charities in appealing to the Institute asks that the Institute use its influence to discountenance the giving of such letters as

described above. Probably few people other than professional charity workers realize the amount of suffering people have had to endure who have gone West and South searching for the cure with inadequate means for their support.

In the November *Bulletin* of the California State Board of Health, Dr. George H. Kress, president of the California Association for the study and prevention of Tuberculosis makes this statement: "The great problem in the tuberculosis situation in California is the care, not of the native born who acquire the disease, but of the penniless consumptives who come here in such advanced stages that cure is out of the question, and whose lack of financial means very soon places them on the bounty of the California communities. In an analysis of the Los Angeles deaths from tuberculosis, made several years ago, the writer of this article demonstrated that almost 50 per cent. of the Los Angeles tuberculosis morbidity and mortality was among such penniless persons. So bad did this condition become that last year the writer induced the Los Angeles Conference of Social Workers, through the Associated Press, to send an appeal throughout the country asking eastern organizations to refrain from sending these advanced and penniless consumptives to the southwestern section of the country.

The woe of these sufferers was well set forth in a poem in the January number of *Scribner's Magazine*, entitled "The Exile."

In order to learn the prosaic facts at the basis of such a poem, and to enable us to write a protest that would command attention, particularly of physicians, letters were written in the early part of January to a number of specialists in the West and South asking them to tell what happens to indigent tuberculosis patients who come to their attention. The following are quotations taken from the replies to this letter of inquiry:

FROM CALIFORNIA

I wish to speak of the most extreme case I have ever known of a consumptive who literally died on the curbstone or gutter, being removed from a cellar to the ambulance. This poor unfortunate came to our city in search of health. He had an antipathy to hospitals, and it was impossible to get his consent to remove him to the county institution. No boarding-house will knowingly take a consumptive in this city, and his abode was a cellar with little or no ventilation and more or less damp. Finally, as death approached, he agreed to allow himself to be taken to the county hospital and in the transportation died, as I have said above, and his body consigned to the Potter's field.

We have as fine an equipped hospital as there is in the country, and yet it is so crowded, especially the tubercular ward, that from the second-stage consumptive to those who are dying, the ward is as crowded as a military hospital after a battle.

SPENCER K. SEWELL,

General Secretary, Associated Charities of Los Angeles, Cal.

It is a crime to send a patient with tuberculosis away from home among strangers when he has not the funds to care for himself. If his friends are compelled to make sacrifices in order to purchase railroad fare, he himself is going to be compelled to make greater sacrifices when he reaches the new strange country in which he is expecting to find a wonderful cure, and this of itself jeopardizes the chances that he might otherwise have. It is far better to have intelligent

guidance at home, even under bad climatic conditions, where the necessities of life can be furnished the patient, rather than attempt to regain health in a new country among strangers without the necessary money for a livelihood.

I have scores of patients coming to me each year who have arrived with barely enough money to keep them a month; some without sufficient to keep them a week. These patients do not get well. They have no chance to get well; but if they would live the right lives with proper guidance at home their chances would be greatly enhanced.

A. M. POTTINGER,

The Pottinger Sanatorium, Monrovia, Cal.

The habit of some physicians in giving a note to a consumptive, stating that he desires to go to California, is without means, and asking for donation for train fare, and then shipping him west, is especially reprehensible.

It is reprehensible in that first of all a great injustice is done the poor consumptive himself; for when he reaches the west, without funds and friends, he is battered from pillar to post, and often dies under most miserable circumstances.

It is wicked to send a poor consumptive far from home and friends to die of gradual starvation and home sickness, or as a charity patient in the county hospital, with the last resting place in the Potter's field or a medical college (and as secretary of the State University Medical Department I can testify to the large proportion of tuberculous cadavers), and I am sure that those who send these poor consumptives out into the west do so without thought of the ultimate end of it all.

DR. GEORGE H. KRESS,

Pres. California Assn. for Study and Prevention of Tuberculosis, Los Angeles.

FROM COLORADO

Those of us who have resided in Colorado for some years, and who, like myself, are engaged in this work, examining thousands of tuberculous cases every year, have witnessed many tragedies resulting from misdirected charity on the part of churches, fraternal orders, societies and philanthropic organizations, in furnishing transportation to Colorado to poor consumptives. In the majority of instances these cases were far advanced, and the anxiety and worry occasioned by their lack of, or limited funds, together with the uncertainty of proper housing and protection after reaching Colorado, frequently hastened the end.

It is a grave mistake for consumptives to come to Colorado seeking health unless their financial resources amount to at least \$500. The tuberculous patient coming here without funds finds it extremely difficult to obtain employment. In the first place, the supply is greater than the demand; second, business men are not willing to employ consumptives until they have recovered. Finally, the patient who stands an excellent chance of recovering his health under favorable conditions, loses this chance if he follows his usual occupation and is compelled to work before he is well on the road to recovery.

I feel very strongly on this subject, and would urge all medical societies and charitable organizations to emphasize these facts, in justice to the poor consumptive.

C. WALTER HOLDEN,

Medical Director, Agnes Memorial Sanitarium, Denver, Colo.

FROM NEW MEXICO

I trust that you will be able to convince the public that it is a most serious mistake for any consumptive to come to New Mexico who has not sufficient means to support himself comfortably without labor for at least a year. Patients not thus provided with means would do much better to spend what money they have in resting out of doors, adequately protected and well fed and under the care of a competent physician.

COL. H. A. BUSHNELL, Fort Bayard, N. M.

We sincerely hope that the evidence herein set forth is sufficiently convincing to deter any one who reads it from either signing a letter or helping to send poor tuberculous patients from their homes, unless money enough can be provided to pay for their care in a sanatorium, or money enough to keep them comfortably for at least six months without labor, and then only in case it is certain the patient has not advanced beyond the incipient stage of the disease.

It is the personal conviction of the writer, however, after fourteen years of experience in charitable and tuberculosis work, that it is the best thing for tuberculous patients to stay pretty close to home, even if they have plenty of money to go wherever they wish. As for himself, he should take his chances for a cure right here in Illinois in preference to "chasing the cure" in any other state or climate.

JAMES MINNICK,

Secretary Illinois State Association for the Prevention of Tuberculosis.

THE TWENTY IMMORTALS

CHICAGO, March 20, 1912.

To the Editor:—We are interested in your list of "Twenty Greatest Names in the History of Medicine," exclusive of the present century, in the February JOURNAL, and avail ourselves of your invitation to pass an opinion on it and to suggest others. The limitation to twenty names is a narrow one, and we venture that out of a hundred lists no two would be identical, even though compiled by thoughtful men, well versed in medical history. One should be guided by some standards of comparison, such as weight of influence on medical thought and progress, epoch making discoveries and inventions, and life saving methods in practical and preventive medicine, that have reached the greatest results in the preservation, conservation and eugenics of human life.

To begin with, let us eliminate the very first name, "Æsculapius" (probably legendary), for the very reason that he belongs to mythology, and no authentic contribution to medical knowledge can be attributed to him. Then we would cross off the names of Von Leuwenhoek, who was not a physician, but a naturalist, and maker of optical instruments, whose chief fame rests on having confirmed by the microscope, Harvey's discovery of the complete circulation of the blood through the connecting capillaries. For the same reason we would exclude the name of Charles Darwin, one of the greatest naturalists and philosophical scientists; he was not a physician, however, nor did he contribute anything of note to the most important problems of medical research. Now we shall have room for Dr. Charles B. Johnson's suggestion, in the March number, of Vesalius and Koch. For certainly no exclusive list of twenty would be complete without the "father of anatomy" and the immortal bacteriologist. With these we would yield a place to Dr. J. B. De Lee's choice of Semmelweis without crowding Lister from the circle. Both were pioneers and apostles of antisepsis and asepsis in obstetrics and surgery, to each may be credited the saving of untold thousands of lives.

If now we may be indulged we would place three stars of the first magnitude in the stead of Larrey, Simpson and Gross. In place of the first we would choose Von Halmnotty, whose invention of the ophthalmoscope and ophthalmometer solved the problem of accommodation and refraction, and whose practical discoveries in the field of optics alone, rank among the greatest triumphs of modern physiology and the saving of a mighty host from blindness. In the place of Simpson we present our own J. Marion Sims, the father of gynecology, and in the place of Gross, much as we honor him, the name of Emil Behring, whose epoch-making discovery of a curative and immunizing antitoxin for diphtheria ranks next in importance to Jenner's vaccine.

We are curious to hear from the next fellow and pass the list over for further revision.

Very truly yours,

ALBERT H. BURR, M.D.

DR. HOWARD CRUTCHER MAKES STATEMENT

ROSWELL, NEW MEXICO, March 27, 1912.

To the Editor:—Please do me the kindness to state in your columns that I have never had any connection, direct or indirect, with the National League for Medical Frauds, nor with any association with an allied name or purpose.

Very respectfully,

HOWARD CRUTCHER.

THE OFFICIAL PREPARATIONS OF THE U. S. P. AND N. F.

We believe the medical profession to-day is thoroughly alive to the need of a more perfect materia medica, a more perfect disease-fighting armamentarium with which to combat disease.

Physicians well realize the fact that their profession's progress in diagnosis, surgery, etc., has been most excellent, but the correct application of remedies to meet the condition established by diagnosis has not progressed nearly so well.

With a view of supplying the physician with reliable information regarding the standard, official drugs and preparations of the United States Pharmacopeia and the National Formulary, as well as other reliable drug products, we have determined to open a department in THE JOURNAL with this end in view. We will each month discuss two or more such preparations. This month we will feature the Elixir of Terpin Hydrate with Heroin, N. F., Hexamethylenamine, U. S. P., and the Syrup of Tolu, U. S. P.

ELIXIR TERPINI HYDRATIS CUM HEROINA, N. F.—The Elixir of Terpin Hydrate with Heroin contains 1 grain (0.065 gm.) of terpin hydrate and about $\frac{1}{24}$ grain (0.0027 gm.) of heroin to each dose, the dose being 4 c.c. (1 fluidram). It is flavored with orange and saccharin. It also contains 40 per cent. each of alcohol and glycerin.

Terpin Hydrate is an efficient stimulant and antiseptic to the respiratory mucous membranes, exerting its action in the course of its excretion through the lungs. It diminishes excessive bronchial secretions in a rather specific manner. In fact, all acute and many chronic affections of the respiratory passages form the proper field for its therapeutic action.

Heroin is an artificial alkaloid (di-acetyl-morphin); it is considered less toxic than morphin or codein, both of which it resembles in its physiologic effect, especially as a sedative in cough.

In case of objection to the use of heroin in this preparation, the Elixir of Terpin Hydrate with Codeine, N. F., may be substituted. This contains $\frac{1}{8}$ grain of codeine to each teaspoonful dose; or the plain Elixir of Terpin Hydrate, N. F., may be prescribed. Terpin Hydrate may also be prescribed in capsule form, either alone or in combination with other drugs.

This elixir is frequently prescribed in combination with equal parts of the Compound Syrup of White Pine (*Syrupus Pini Strobi Compositus*, N. F.), which makes an efficient remedy in numerous cases of bronchial affections.

Physicians are warned, when prescribing this elixir, to add "non-repetatur" in their own handwriting, to prevent the forming of a possible heroin addiction, which is as difficult to overcome as the morphin habit.

HEXAMTHYLENAMINA. U. S. P.—Hexamethylenamina is a condensation product obtained by the action of ammonia on formaldehyd. It occurs in colorless, lustrous, odorless crystals, very soluble in water and alcohol, and has an alkaline reaction.

This drug is rapidly absorbed and rapidly eliminated in the urine, although excretion may last several days. It is excreted partly unchanged and partly as formaldehyde, and has the property of rendering this secretion sterile for a long time and in ridding it of bacteria. Its antiseptic power to arrest ammoniacal decomposition of this secretion is truly remarkable at times and in this respect it ranks first among all *materia medica* products.

Permanent results are best obtained by continuing its administration until some time after the urine has become apparently sterile. In such cases where the drug is indicated, but where the urine is alkaline, formaldehyde may not be liberated; in these cases the administration of the drug should be preceded by a course of benzoic acid.

Ordinary medicinal doses cause no general effects as a rule, but in some susceptible persons it may cause gastric and renal irritation. The average dose is 4 grains (0.25 gm.), and the average daily dose from 15 to 30 grains (1 to 2 gm.).

Hexamethylenamine is an unstable chemical and for this reason should generally be prescribed alone, that is, either reduced to a powder and inclosed in capsules, or in solution in some aromatic water. As a rule, however, capsules and especially tablets of the drug, should not be prescribed, on the general principle that "the stomach and intestines cannot absorb any substance until it is reduced to the fluid form, and these

organs, being generally weak in disease, should not be given the added labor of first dissolving a drug in tablet form (and which may be so hard as to be insoluble)."

While other liquid preparations may be prescribed with a solution of hexamethylenamine, no acid-containing preparations should be so prescribed as decomposition would be liable to ensue, and thus defeat the prescriber's intent.

A compound preparation of this valuable drug may be formed somewhat according to the following formula:

Hexamethylenaminæ	3ii
Lithii citratis	3i
Fluidextracti sabali	3iii
Tincturæ cinnamomi	3iv
Syrupi aurantii flori, ad.....	3iv

SYRUPUS TOLUTANUS, U. S. P.—Syrup of Tolu is one of the mild expectorant preparations of the pharmacopeia, and constitutes one of our best vehicles in those prescriptions that are intended for the relief of bronchial and pulmonary affections, on account of its very agreeable flavor.

It contains 1 per cent. of balsam of tolu. Its average dose is about 16 c.c. (4 fluidrams), although being used almost exclusively as a vehicle, smaller doses are usually administered.

It finds its chief employment in such cases where the mucus is tenacious and is coughed up with difficulty.

In this connection it may be valuable to state that such adjuvants as bromids, codein, chloroform, heroin, etc., are often greatly beneficial to expectorants, when the cough is distressing; licorice, glycerin or acacia, when the fauces are excessively irritable and a demulcent is indicated; strychnin, when the respiratory center has become weakened, and belladonna, compound spirits of ether, and especially lobelia, when bronchial catarrh excites asthma and antispasmodics are indicated.

Preliminary Program

ANNUAL MEETING OF THE ILLINOIS STATE MEDICAL SOCIETY AT
SPRINGFIELD, MAY 21, 22, 23, 1912

MEDICAL PAPERS

1. Oration in Medicine. Some Modern Medico-Sociologic Conceptions of the Alcohol, Venereal Diseases and Tuberculosis Problems.
S. A. KNOPP, New York.
2. The Sputum in Tuberculosis.
W. H. JAMIESON, Ottawa.
3. Movable Kidney; Should We Operate or Should the Patient Wear a Kidney Truss?
J. E. COLEMAN, Canton.

4. The Slighter Forms of Little's Disease. HAROLD N. MOYER, Chicago.
Discussion opened by Julius Grinker.
5. The Vaccine Treatment of Some Unusual Infections, with the Report
of Illustrative Cases. EDWARD C. ROSENOW, Chicago.
6. Report of the Recent Epidemic of Streptococcus Infections in
Chicago. ROBERT B. PREBLE, Chicago.
7. Pyloric Stenosis in Infancy, with Report of Cases; Medical Aspect.
FRANK X. WALLS, Chicago.
8. The English National Insurance Bill. W. A. EVANS, Chicago.
9. On Cutaneous Reactions in Infectious Diseases.
ERNEST E. IRONS, Chicago.
10. Brill's Disease, Mild Typhus Fever, in Michael Reese Hospital.
SOLOMON STROUSE, Chicago.
11. (Subject to be announced later.) BERTRAM W. SIPPY, Chicago.
12. Non-Surgical Recurrences of Malignant Growths after Operation.
JAMES B. HERRICK, Chicago.
13. Orthostatic Albuminuria. EVERETT J. BROWN, Decatur.
14. Anterior Poliomyelitis. J. H. BACON, Peoria.

SURGICAL PAPERS

1. Oration in Surgery (subject to be announced later).
DUDLEY P. ALLEN, Cleveland, Ohio.
2. What Modern Bacterial Research Has Done for Genito-Urinary
Surgery. FRANK G. LYDSTON, Chicago.
Discussion opened by B. C. Corbus, Chicago.
3. Diagnosis in Cases of Cranial Trauma.
ARTHUR B. EUSTACE AND RALPH C. HAMILL, Chicago.
Discussion by Frederic Besley and A. E. Halstead, Chicago.
4. Pyloric Stenosis in Infancy with Report of Cases.
H. M. RICHTER, Chicago.
Discussion by Coleman G. Buford, Chicago.
5. The Abdominal Crisis. ALLEN B. KANAVAL, Chicago.
Discussion by M. L. Harris and William Fuller, Chicago.
6. Anomalies and Malpositions of the Colon, Congenital and Acquired.
WILLIAM R. CUBBINS, Chicago.
Discussion by J. F. Percy, Galesburg, Ill., and Carl Beck, Chicago.
7. Treatment of Cancer High in the Rectum. CARL B. DAVIS, Chicago.

8. Fulguration Treatment of Bladder Tumors. HERMAN KRETSCHMER.
9. What the General Practitioner Should Know Concerning Surgical Diseases of the Kidney. DANIEL EISENDRATH, Chicago.
Discussion by Arthur Dean Bevan and Samuel C. Plummer, Chicago.
10. Osteomata and Muscle Degeneration. LAWRENCE RYAN, Chicago.
11. Review of Twelve Cases of Pernicious Anemia. Report of Metastatic Focal Infections in the Puerperium. J. H. STEALY, Freeport, Ill.
12. Indications for Gastro-Enterostomy. EDWARD S. MURPHY, Dixon, Ill.
Discussion opened by C. Hugh McKenna, Chicago.
13. Important Eye Symptoms in Albuminuria of Pregnancy.
A. B. MIDDLETON, Pontiac, Ill.
Discussion by C. A. E. Lesage, Dixon, Ill.
14. Some Interesting Fatalities. A. CAMPBELL, Clinton, Ill.

EYE, EAR, NOSE AND THROAT SECTION

1. Acute Inflammation of the Thyroid Gland. OTTO J. STEIN, Chicago.
2. Adenoid Vegetation of the Nasopharynx.
J. WHITEFIELD SMITH, Bloomington, Ill.
3. Combination Operations between General Surgeons and Otolaryngologists.
J. C. BECK, Chicago.
4. Treatment of Corneal Ulcers. C. A. E. LESAGE, Dixon, Ill.
5. Melanotic Sarcoma of the Iris. G. F. SUKER, Chicago.
6. Hemorrhage as a Cause of Blindness. C. B. WELTON, Peoria, Ill.
7. The Treatment of Secondary Divergent Strabismus.
H. W. WOODRUFF, Joliet, Ill.
8. Accidents and Complications Attending or Following the Extraction of Senile Cataract.
CASEY WOOD, Chicago.
9. The Brain and Sinus Complications of Otitis Media.
A. H. ANDREWS, Chicago.
10. Operative Treatment in Empyema of the Maxillary Sinus.
C. M. ROBERTSON, Chicago.
11. (Title to be announced later.) W. L. BALLENGER, Chicago.
12. The Traumatic Dislocation of the Crystalline Lens Without Rupture of the Eyeball; also the Report of a Case Treated.
C. F. BURKHARDT, Effingham, Ill.

13. Prevention of Blindness and Conservation of Vision.

THOMAS WOODRUFF, Chicago.

14. Hemorrhage as Related to the Eye, Ear, Nose and Throat. Surgery.

A. E. PRINCE, Springfield, Ill.

PROPOSED AMENDMENTS

To the Editor:—At the meeting of the House of Delegates held on May 18 last, the following Articles of the Constitution and Chapters of the By-Laws with proposed Amendments attached were ordered to be printed in the July and April JOURNALS.

E. W. WEIS, Secretary.

ORIGINAL

ARTICLE V.—HOUSE OF DELEGATES

The House of Delegates shall consist of (a) Delegates elected by the Component Societies; (b) the Councilors; and (c), ex-officio, the President and Secretary of this Society, and the Chairmen of its Standing Committees. It shall be the legislative body of this Society, and shall conduct all business, except such as is otherwise provided for by the Constitution and By-Laws. All recommendations of the House of Delegates dealing with the acquisition or disposal of property of any kind, or with the appropriation or expenditure of funds in any way must be approved by the Council before the same shall become effective. Twenty Delegates shall constitute a quorum for the transaction of business.

(Offered by Black)

ARTICLE V

Lines 14 and 15 to read

come effective. Twenty delegates representing not less than ten counties shall constitute a quorum for the transaction of business.

(Offered by Zurawski)

ARTICLE V—HOUSE OF DELEGATES

The House of Delegates shall consist of delegates elected by the Component societies and President of this society ex-officio. The other officers, Chairmen of Standing Committees and Chairmen of Scientific Section may take part in the proceedings of the House of Delegates but without the right to vote. It shall be the legislative body of this society and shall conduct all business, except such as is otherwise provided for by the constitution and by-laws. All the recommendations of the House of Delegates dealing with the acquisition or disposal of property of any kind, or with the appropriation or expenditure of funds in any way must be approved by the Council before the same shall become effective. Twenty Delegates shall constitute a quorum for the transaction of business.

ORIGINAL

ARTICLE III.—COMPONENT SOCIETIES

Component Societies shall consist of those county medical societies which hold charters from this Society.

(Offered by Black)

ARTICLE III

Line 2 to read

county or local Medical Societies which hold charters.

ORIGINAL

SEC. 4. Only one component medical society shall be chartered in any county. Where more than one county society exists, friendly overtures and concessions shall be made, with the aid of the Councilor for the district, if necessary, and all of the members brought into one organization. In case of failure to unite, an appeal may be made to the Council, which shall decide what action shall be taken.

(Offered by Black)

CHAPTER X—SECTION 4

Line 2

introduce after the word county the following: "Provided that in counties having 300 or more members branch county societies may be organized and receive regular charters as component societies upon application to the council in the usual manner and provided that each branch county society thus organized shall contain not less than 75 members who shall live within a definite circumscribed district and who shall constitute not less than 50 per cent. of the legally qualified physicians living in that district."

ORIGINAL

SEC. 3.—The general section, or each section, as the case may be, shall elect its own chairman and secretary.

(Offered by Coleman)

CHAPTER IV—SECTION 3

And the section officers for such scientific work shall be elected for two years, and the President and Secretary of such sections shall go out on alternate years, and that the committee on scientific work meet as soon as convenient after the adjournment of the State society.

COUNTY AND DISTRICT SOCIETIES

ADAMS COUNTY

The Adams County Medical Society met in regular monthly session Monday, March 11, in the new Chamber of Commerce rooms. President Pittman called the meeting to order. Others present were: Drs. Ball, Nickerson, Williams, Christie, Shawgo, Montgomery, Blickhan, Reiffert, Collins, Miller, Schullian, Wells, Knox, Pendleton, Knapp, Irwin, Stine, Pearce, Center, Bloomer, Ericson, Tripp, Gabriel, Reticker, Austin, Brenner, Groves, Kidd and Koch. The weather was very unfavorable, but nevertheless the attendance was good. During the past month our society has sustained a severe loss by the death of one of its oldest and most faithful members, Dr. W. E. Gilliland of Coatsburg, Ill., whose death occurred February 28, at the age of 79 years. In the spring of 1870 he began practicing medicine at Coatsburg and continued to practice until his death. A committee, consisting of Drs. Williams, K. Shawgo and Nickerson, were appointed to draw up resolutions relative to the death of Dr. Gilliland. They read their report at this meeting. It was received and placed on file. It was moved and seconded that a copy of the same be sent to the family and also that a page be set aside in our records as a memorial to the memory of our departed member. A delicious luncheon was served at the Hotel Newcomb at 12:30 p. m., which was enjoyed by a majority of the members. In the afternoon Dr. Carl E. Black of Jacksonville, councilor for this district, addressed the society on "Displacements of the Colon." The doctor expected to show forty stereopticon slides, but when the time came a very necessary part of the stereopticon had disappeared. Even without the pictures the paper was very instructive and brought forth considerable discussion. We trust the next time Dr. Black visits us everything will go off smoothly. Adjourned.

COOK COUNTY

CHICAGO MEDICAL SOCIETY

Regular Meeting, Jan. 10, 1912

A regular meeting of the Chicago Medical Society was held Jan. 10, 1912, with the president, Dr. J. M. Patton, in the chair. The program consisted in a Symposium on Gastric and Duodenal Ulcers, with the following papers: Dr. Charles L. Mix read a paper on "Symptomatology and Medical Treatment." Dr. J. B. Murphy read a paper on "Surgical Treatment."

DISCUSSION

Dr. B. W. Sippy: This subject is such an immense one that one hardly knows where to begin. As to the frequency of these ulcers, there is a feeling now that the duodenal ulcer is as frequent as the gastric, in fact, more so. Rokitsansky found gastric ulcer four times as frequent as duodenal ulcer. An English pathologist found ten ulcers in the stomach to one in the duodenum. And so it has been generally held by pathologists on the basis of such findings, that the gastric ulcer is much more frequent than the duodenal. Within more recent years Moynihan, Mayos and others, who observed these cases at the time of operation, decided that the duodenal ulcer was much more frequent than was formerly supposed. According to their findings it was as frequent, if not more so, than gastric ulcer; something like 60 per cent. being found in the duodenum. That is the living pathology and as opposed to the deadhouse pathology there is a considerable difference.

It is perfectly plain why they have found duodenal ulcer more frequent than gastric ulcer. It is located in a circumscribed area in the small bowel, and when it is present it is prone to lead to complications requiring the services of the surgeon. There is apt to be a cicatricial narrowing, perforation, hemorrhage, etc., and the surgeon is more likely to see these cases than he does the cases of gastric ulcer. Gastric ulcer located on the lesser curvature or posterior wall heals with the barest kind of treatment. The tendency is to heal, unless some complication occurs; otherwise these ulcers heal with or without treatment. They leave their scars; the pathologist finds them; on these findings he bases his statistics. He sees more cases of gastric ulcer; the surgeon sees more cases of duodenal ulcer. We must bear these things in mind when we speak of the frequency of these ulcers.

Post-mortem statistics, old and new, show that pyloric ulcer is not nearly as common as ulcer on the lesser curvature or posterior wall. Only 14 per cent. occur in the pyloric region. That is another point to bear in mind.

As to achylia gastrica, Dr. Mix assumes that the acidity of the chyle has to do with the opening of the pylorus. It is interesting to note that achylia gastrica, where there is relatively no secretion of hydrochloric acid, the stomach empties itself quicker than normal. Giving a test meal and removing it at the end of an hour, we usually get nothing. We must aspirate ten to fifteen minutes after the test meal to find anything, and there is no acid secreted at all. I do not believe that diminished acidity inhibits opening of the pylorus at all.

The symptoms outlined are those of the uncomplicated ulcer, the pain appearing one to two hours after eating and being relieved by food. Frequently ulcers are complicated by pyloric obstruction, perigastric abscess, etc., and in such cases the symptomatology is considerably modified. Pain may occur in the morning before breakfast and is not always relieved by the taking of food. The acidity may be so great that the food taken is not sufficient in amount to neutralize the acid. In the uncomplicated case it is the acidity that produces the irritation.

Relative to gas pains. The feeling of fulness and pressure attributed to gas is usually not due to gas at all. It is caused by the acid irritating the ulcer or the mucous membrane. The patient learns that belching will give relief from these symptoms. He swallows air and aspirates air during the act of belching, and the fulness is relieved temporarily by bringing up a little air. When enough air is in the stomach to overcome the closure of the lower end of the esophagus, the atmospheric air is belched up and the patient gets relief.

The constipation in these cases of ulcer is largely due to the diet. The patient soon learns to abstain from coarse foods, and it is the lack of residue that causes the constipation. The diet is usually restricted to soft foods, foods that are non-irritating; they drink soups and milk and live on cereals; therefore constipation appears.

As to the hyperacidity. Formerly, more than now, that was supposed to be diagnostic of gastric ulcer. Since then it has been shown that it is not such a constant accompaniment of gastric ulcer. More than normal secretion is present in not more than 50 per cent. of the cases; 40 per cent. having normal acidity and 10 per cent. less than normal acidity. But it would be relatively rare that hyperacidity would be absent. If lactic acidity is present, it will speak strongly against ulcer; that is, when present in pathologic quantities. Lactic acidity alone will be of little value; to be of value in diagnosis it must be associated with the retention of food over night, the presence microscopically of large numbers of long bacilli. Then lactic acid becomes important. Under such conditions it is extremely rare that ulcer is present. If there is obstruction of the pylorus and retention of food, it may be ulcer, but always, usually, there is carcinoma complicating it.

As to occult blood. The absence of occult blood does not exclude ulcer, but if on repeated examinations there is no occult blood, it speaks against it. However, the finding of occult blood in the stomach contents is of much minor

importance to finding it in the stool, if hemorrhoids are excluded, and they usually can be so excluded. Blood coming from the stomach or duodenum is practically always digested; we never find microscopic blood elements. Otherwise the statements made by Dr. Mix are quite correct.

Relative to treatment. The question to-day is, first, shall the case be treated medically or surgically? The general practitioner is more or less confused in regard to that after he has made his diagnosis. Is it fair to treat the patient medically, or should he be taken to the surgeon at once? There are very definite indications for medical treatment as well as for surgical treatment. The diagnosis should include not only the fact that ulcer is present, but what complications, if any, exist. Is there any reason for expecting that carcinoma is present? If there is, surgical treatment is indicated. Is there inflammation, narrowing of the pylorus, local peritonitis, perigastritis, perforation, hemorrhage or constant oozing which is depleting the stomach? If so, surgical treatment must be instituted at once. A long-continued history of gastric discomfort must be analyzed carefully. It may resolve itself into repeatedly recurring ulcer, so that the recent ulcer is only of a few weeks' or months' standing. One must determine these points, and as formidable as they may appear, it does not take a long time to decide just what is going on in the given sense. Much may be learned at the first examination, and after two or three days it is nearly always possible to determine accurately just what is the trouble.

If certain complications exist, the case should be treated surgically at once. When these complications do not exist, then the majority of cases are medical cases. When these conditions, which are remediable and removable by the surgeon do not exist, what can he do, except excise the ulcer? Years ago when Doyan spoke of his gastro-enterostomies for ulcer, he attributed the cure to the fact that he produced drainage. The food went into the stomach and on into the intestine. The ulcer was side-tracked; it was relieved from irritation by the passage of food over it, and because of that, the ulcer healed. Of course, as a result of that opinion, operations for ulcers were done in large numbers all over the world.

After the physiologist began to look into this matter, he soon found that a stomach that has been so treated did not empty itself through the gastro-enterostomy opening if the pylorus remained patent, nor did it empty itself any earlier. Experimental work on animals and man showed that it was impossible to make a funnel out of the stomach; that it always emptied itself so long as the pylorus was open and in the normal time. Therefore, the relief to be expected from this operation is not what was formerly expected. The surgeons then learned that the cases that do the best are those in which there are complications, and now a gastroenterostomy is not done except when there is definite obstruction at the pylorus. The surgical treatment is limited to the complications and sequelae of ulcer and to the excision of old ulcers. Otherwise the case should be treated medically.

The results of management depend largely on the skill employed. The old idea of putting the patient to bed and giving soft foods and certain drugs for a reasonable period of time, and calling it an ulcer cured when the pain had disappeared for five weeks, was simply a case of granulation tissue forming. The ulcer was not healed. Many patients get well under such management. An ulcer of recent standing gets well quickly; the longer the ulcer exists the longer it takes to effect a cure.

The patient can go about his work, as a rule, after six weeks' treatment with small feedings and the frequent use of alkalis. The majority of ulcers, even those 2 years old, will heal quickly, but the ulcer may become so broad and deep that it will never heal, and then excision is indicated. Every ulcer patient should be put to bed and treated energetically and well. Usually not enough attention to detail is given to these cases. That accounts for a large number of failures. If the surgeon did not give any more attention to these cases than some medical men give them, the surgical mortality would be frightful. We must watch the

food carefully, giving the amount and kind required; giving sufficient alkalis, and it will be possible to aspirate at any time during the day and find only a trace of hydrochloric acid.

It frequently happens that these cases which are managed carefully during the daytime, at night when it is generally supposed that the ulcer heals, will pour out a large amount of secretion, so as to irritate the ulcer and undo much of what has been done during the daytime. We must aspirate now and then during the night to see whether much or any secretion is present. These patients, when treated as indicated, if medical cases from the beginning, usually remain medical cases, and it is seldom that the surgeon is called on to operate in such a case. But the patient must be watched every day; every pain must be carefully analyzed. It may be a gall-bladder pain, a complication of ulcer, or if it is an uncomplicated case, it must be hyperacidity that is producing the pain. If pain appears at night, and no acid is obtained on aspirating the stomach, it speaks for something else. If it appears during the daytime when no acid is obtained, a complication exists. It must be remembered that the medically managed case of gastric ulcer does not complain of pain after the first few days. When pain exists there is something wrong; it speaks for hyperacidity or a complication. This brings up the possibility of a mistaken diagnosis. When the ulcer is healing, usually the blood stops in a short time. The stool should be examined for blood every day. In the course of a week or ten days or two weeks the hemorrhage ceases. The ulcer that continues to ooze is a suspicious carcinoma. Then an exploratory laparotomy should be done, and in that way we correct our diagnosis. We must always keep our eyes open to the possibility of carcinoma being present.

Ulcer is relatively rarely diagnosed early because we do not work hard enough to determine the symptomatology present. One must be alive to the possibility of ulcer whenever the patient complains of stomach symptoms. The types of ulcer are many; the ulcer may be latent for a long time. If we wait for the typical signs of ulcer as usually described, by far the great majority of cases of ulcer will be missed because they are usually not typical. If diagnosed early and treated medically before complications occur, there is no disease of a serious nature that yields so readily and so comfortably to management as gastric ulcer, even when it is of a few months' standing.

Virchow said that 37 per cent. of all carcinomata affecting the human body are in the stomach. Years ago it was recognized that at least 6 to 10 per cent. of these tumors develop on the site of an ulcer. Years ago an enthusiastic pupil of Saenger said that all carcinomata of the stomach develop at the site of an ulcer. Somewhere between these extremities the truth lies. It is difficult to figure it out accurately. It is very probable that from 40 to 60 per cent. of stomach carcinomata develop at the site of the ulcer, not a recent ulcer, but an old ulcer. Patients with stomach trouble or discomfort nowadays nearly all seek medical advice, so that all of these cases ought to be diagnosed early and such disastrous complications headed off. Unfortunately, ulcer is relatively rarely diagnosed early. They are discovered when they need surgical treatment or when the carcinoma stage has developed. Recent ulcer, reasonably early diagnosed and energetically treated medically will always get well. The symptoms disappear early; the ulcer heals rapidly; the pain disappears and everything goes on smoothly. It is our business to study this subject thoroughly because it is coming to be of more importance every day. The great frequency of carcinoma being found on the site of these old ulcers, makes it imperative that we study these cases carefully, keeping in mind the possibilities of complications of all sorts. We should not put the patient off with an ordinary prescription, such as is usually given, but we should analyze that case and let it be in the foreground that it may be a case of gastric ulcer. By doing so we may in large measure prevent the occurrence of the complications requiring the services of the surgeon, and above all, prevent that tremendous waste of life incident to the development of carcinoma at the site of an old ulcer which has been neglected.

Dr. Arthur Dean Bevan: The members of this society have contributed much to this work, especially the surgical phase of it. Senn's bone plates are a thing of the past, and yet they serve as a stimulus in this work on the stomach. Mayo Robson and his assistants told me at the time that the stimulus for the splendid work done by them was Senn's work with his bone plates. No one's work on surgery of the stomach is referred to more widely than that of Murphy. A review of recent literature shows that the introduction of the button by Murphy into stomach surgery was one of the greatest means of developing that line of work. The splendid results by the world's most famous surgeons have demonstrated the possibility of stomach surgery. The admirable work done by E. Wyllys Andrews in the surgical management of ulcers accompanied by very serious hemorrhage has been one of the best contributions to stomach surgery.

I have been doing a considerable amount of stomach surgery and I have been impressed with the fact that as in brain tumor we are dependent on the neurologists for assistance in diagnosing, so we are in like manner dependent on the internist in these cases of gastric disease. Many patients have been operated on unnecessarily, because of a lack of team work between the internist and the surgeon. That is really a very important criticism to be made of many surgical clinics.

I do not think that we can discuss this subject of stomach ulcer without taking into consideration stomach carcinoma. That has been evident from the papers and the discussion. As a general proposition, I believe that we must regard ulcer of the stomach as a medical condition; one that is handled properly by the internist, unless complications arise, such as those mentioned by Dr. Sippy and Dr. Mix. Then, of course, the patient should be turned over to the surgeon. The tyro in surgery, the man who is doing a little work unassisted by a good diagnostician, is doing many unnecessary gastro-enterostomies or other operations on the stomach. Men who have had a considerable experience in this work demand that there be a distinct and definite indication for the performance of these operations. When we operate on a supposed case of gastric ulcer because of supposed complications, and when on drawing the stomach out of the wound we fail to find any gross lesion, it is our duty to convert that operation into an exploratory operation and acknowledge our mistake. It is a great mistake to do a gastro-enterostomy unless you can demonstrate a gross lesion demanding such an operation.

The second proposition is this: Carcinoma of the stomach is a surgical lesion. It should be handled by the surgeon. We are quite willing to turn over the terminal stage to the internist. Carcinoma of the stomach is as much a surgical lesion as is epithelioma of the lip. Nothing can be done for this condition by medical management except to give relief in the final stages. The trouble is, however, that we are not making our diagnoses early enough. If recognized and treated early, there is a very good prospect for establishing a permanent cure. The mortality of the operation, done early, is about 10 per cent., with 25 per cent. permanent cure. All those not permanently cured we can promise considerable palliation, relief from pain for a period of some months.

To my mind, the most important thing of the whole subject is the recognition of carcinoma of the stomach. One cannot differentiate ulcers from carcinoma absolutely. I think we ought to take this position: cases that seem to us to be ulcer cases should be given the benefit of proper ulcer treatment, and if they do not heal promptly, then an exploratory operation should be performed. If carcinoma is found, a radical operation should be performed at once to offer the patient every chance of a cure.

As to the technic of the operation, it has been shown definitely that the posterior gastro-enterostomy is the best procedure. Murphy uses his oblong button. I believe we can obtain as good results, if not better, by proper suturing, using the Albert-Lembert suture. That this is successful is shown by the fact that peritonitis has been almost entirely eliminated from the ordinary gastroenterostomy. As far as excision of the ulcer is concerned, we have excised a limited number,

but believe that the operation should be reserved for those cases where there is a fair suspicion of carcinoma, or an inability to determine, even after we have opened the peritoneal cavity, whether it is a case of ulcer or carcinoma—and that is by no means infrequent. We have often had the experience of opening the abdomen and finding at the pylorus a large thickened mass, some enlarged glands, and saying that it is carcinoma. An excision was done, and when the specimen was examined microscopically it was found to be simply an ulcer.

One other point should be brought out in the management of these cases. It would be well occasionally when we have not found a gross lesion which we expected as a complication of ulcer, to make either a pyloroplasty or an incision into the stomach and examine the interior digitally.

In one case Dr. Sippy and I had together, the diagnosis seemed to be that of hour-glass stomach. When we opened the abdomen there was no evidence of hour-glass stomach, but our previous findings pointed so definitely to that condition that I did not hesitate to make an incision into the stomach. I examined digitally and found the contraction limited to the mucosa and submucosa. Had I not examined digitally the condition would have escaped us.

I think, too, that in cases of hemorrhage where the picture of a gross lesion seems pretty definite, it might be well to do a pyloroplasty and increase the caliber of the pylorus, even if we find no lesion.

Dr. Charles Spencer Williamson: Everyone who has had a considerable number of cases of gastric ulcer will agree that it is one of the most satisfactory conditions to treat which the internist meets, assuming that the diagnosis is correct and that complications are absent. After three or four days of judicious treatment in bed, the pain stops, the vomiting (if any be present) ceases, the occult bleeding grows less, and everything tends toward the better. I want to emphasize several points: First, if the expert is in doubt as to his diagnosis, how much more frequently will the general practitioner err, the man who sees but few of these cases. A fact not sufficiently appreciated is the possibility of the verification of the diagnosis by treatment. We all get cases where we are in doubt as to the diagnosis, especially when seen early, but if the patient is put to bed and treated judiciously and correctly on the supposition that it is a case of ulcer, and the tenderness, vomiting and pain subside in three or four days, it may be regarded as a verification of the diagnosis of ulcer. Of course, if the symptoms are typical (and they usually are not), there will be no doubt about the diagnosis to begin with.

The second point is the matter of examination of the stools. It has been justly criticized that the management of these cases has been perfunctory. In no other respect is this so true as in the detail just mentioned. It is not uncommon to have the doctor say that there was no blood in the stool, because he looked for it every day and saw none. He will even examine it microscopically, and say he found nothing. Of course, he did not. The importance of the test depends on *who makes it and how often it has been repeated*. It is not an uncommon thing to make a large number of these examinations, perhaps every day for weeks, in a patient with marked symptoms, and yet fail to find blood. Then you make a few additional examinations and find it every day. The *intermittent finding of occult blood* is the important point in connection with the diagnosis of gastric ulcer.

Another very important point in the management of these cases is to take care of the anemia which is always present. Iron should be administered in some form or other, and if it seems undesirable to administer it by mouth, it may be given hypodermically. Personally, I use it in nearly every case and preferably hypodermically. It aids very materially in hastening the progress of the case to a cure. These points, if kept before us, and if the case is managed in the manner already outlined by the essayists, will certainly make the medical treatment of simple, uncomplicated ulcer one of the most satisfactory things that the internist has to conquer.

Regular Meeting, Jan. 17, 1912

A regular meeting of the Chicago Medical Society was held Jan. 17, 1912, with the president, Dr. J. M. Patton, in the chair. The program consisted in a Symposium on Infantile Paralysis, with papers as follow: Dr. James W. Jobling read a paper on "Pathology and Prognosis." Dr. Charles M. Jacobs read a paper on "Clinical Aspect and Treatment of Anterior Poliomyelitis."¹ Dr. Peter Bassoe read a paper on "Atypical and Borderland Cases." Dr. John L. Porter read a paper on "Treatment of the Ultimate Deformities."

Regular Meeting, Jan. 24, 1912

A regular meeting of the Chicago Medical Society was held Jan. 24, 1912, with the president, Dr. J. M. Patton, in the chair. The program consisted in a Symposium on Surgery for the Relief of Non-Tuberculous Chronic Joint Disease, with the following papers: Dr. C. A. Parker read a paper on "Pathologic Anatomy." Dr. E. H. Ochsner read a paper on "Local Surgical Procedures."² Dr. John Ridlon read a paper on "Orthopedic Measures." Dr. W. A. Newman Dorland read a paper on "The Relation of Pelvic Disease in Women to Osteo-Arthritic Joints." Dr. F. Kreissl read a paper on "The Relation of Ancient Gonorrhea to Chronic Joint Disease."

Regular Meeting, held Jan. 31, 1912

The meeting of Jan. 31, 1912, was a clinical meeting held at the Cook County Hospital, with the president, Dr. J. M. Patton, in the chair. Dr. J. H. Musser of Philadelphia (by invitation) read a paper on "The Treatment of Goiter." Clinical cases were presented by Drs. George W. Hall, S. R. Slaymaker, Frank Billings and D. N. Eisendrath.

SYMPOSIUM ON EXOPHTHALMIC GOITER

PRESENTATION OF CASES

Dr. George W. Hall: CASE 1.—This patient is a young lady about 20 years of age, who entered the hospital in April, 1909, with practically all the typical symptoms of exophthalmic goiter, such as tachycardia, tremor, palpitation, exophthalmos and enlargement of the thyroid gland. She was kept under observation for a period of three or four months, and was given medical treatment without any apparent improvement. She was finally transferred to the surgical service, and was operated on by Dr. M. L. Harris in November, 1909, with excellent results. She is now able to do a good day's work as a maid without any ill effects. As you can observe, there is a slight exophthalmos present; the frontalis muscle shows no transverse wrinkling when the patient's eyes are directed upward. Von Graefe's sign is absent and her eyes converge accurately. There is no tremor of the hands on inspection, which was very marked previous to the operation. The pulse registers 76. A partial thyroidectomy was performed, and as two years have elapsed since the operation, without any recurrence of symptoms, the prognosis as to permanent recovery is good.

CASE 2.—This woman is 49 years of age. She dates the beginning of her present trouble back about five years when she was operated on for appendicitis and some other pelvic disturbances, the nature of which could not be ascertained. You will notice that there is no wrinkling of the frontalis muscle in this case when her eyes are directed upward. In other words, Joffroy's sign is present. She has marked bilateral exophthalmos and Von Graefe's sign is present and easily brought out when the eyes are directed downward. Stellwag's sign, or infrequent winking, is also present in this case. The thyroid gland cannot be palpated. There is considerable dyspnea present associated with swelling of the lower extremities due to an incompetent heart, as she has a double mitral lesion. There is considerable pigmentation of the skin, especially noticeable in the region of the clavicles. There is a very distinct fine tremor when the fingers are extended. The pulse averages 120 per minute, so that she presents the classical picture of exophthalmic goiter. I want to emphasize the fact that the onset of these symptoms

immediately followed the operation for appendicitis, and a vaginal examination indicates that the uterus was also removed at the same time. The relation of the involvement of the heart to cases of exophthalmic goiter will be brought out in the discussion.

CASE 3.—This woman who is about 48 years of age, gives a history of having lost several pounds in weight during the past few weeks. She came to the hospital with a diagnosis of exophthalmic goiter and tuberculosis. That she has the latter disease is without question. She also has marked exophthalmos and a very large goiter. Her pulse rate is 96, which can be accounted for by the presence of the lung findings. I might add that the goiter has been present since she was 18 years of age. A careful study of this case, revealing the absence of other important symptoms of exophthalmic goiter, causes us to conclude that it is not a case of exophthalmic goiter. But she presents a combination of symptoms which might cause one to be misled in the diagnosis.

I shall not take your time by discussing the usual symptoms of this disease, as you are already acquainted with them. But I do want to call your attention to a few conditions which may arise in the course of exophthalmic goiter. Some of these patients become insane, and the question naturally arises as to the relations that may exist between the goiter and the insanity. Is the goiter and its abnormal secretion the direct and entire cause of the insanity, or are there other factors entering into the etiology? In looking into this question, I find that predisposing factors are present in about 60 to 65 per cent. of the cases, either in the form of hereditary tendencies, or there is present in the patient certain neurotic tendencies previous to the onset of the symptoms of exophthalmic goiter. In about 15 per cent. of the cases the patients have shown previous attacks of mental derangement; so that the insanity is not purely toxic insanity as one might be led to believe, as 60 to 70 per cent. of these insanities come on simultaneously with the culmination of the symptoms of goiter, while perhaps 10 per cent. follow the onset of the goiter.

It is rather interesting to note that the form of insanity is most frequently of the manic-depressive type; that is, these patients so affected will at times be maniacal, and then at other times will be melancholic. It seems to me that this fact alone would tend to show the predisposition in these cases to become insane, only needing this aggravating cause to precipitate the onset. However, these cases as a rule do not lead to dementia, as one would expect; but they either improve with the improvement of the symptoms of the goiter or otherwise the goiter hastens the exit of the patient.

I wish also to speak of the occurrence and development of exophthalmic goiter with pelvic disturbances. In this relation I would call your attention to a recent contribution to the *Journal A. M. A.*, by Hertzler, who reports several cases which seem to show such a relation. His conclusions are that in such instances the pelvic lesions exist before the onset of the goiter symptoms, and that the relief of the pelvic trouble causes the goiter to improve. He is of the belief that the reflex irritation in the pelvis may be the cause of the disturbance of the secretion in the thyroid gland, and therefore emphasizes the importance of making a thorough examination of the pelvis when exophthalmic goiter exists in women.

I desire in this connection to state that exophthalmic goiter exists about five times as often in women as in men, and that in men it usually runs a more severe course, and that more radical measures are indicated in order to effect a cure.

I shall leave the relations of the heart and exophthalmic goiter to be brought out in the discussion. But before closing I wish to mention the occurrence of exophthalmic goiter in patients afflicted with tuberculosis. It has been shown by F. Bailokur (*Zeitschrift für Tuberculose*, 1910) that in about 8 per cent. of tuberculous patients the symptoms of exophthalmic goiter exist; and it has been clinically demonstrated that the improvement of one of the diseases improves

the other. In other words, by the use of medication which improves the symptoms of goiter there is a noticeable improvement in the pulmonary symptoms, and *vice versa*.

Dr. S. R. Slaymaker: A man, aged 25 years, of cleanly personal habits, living in clean surroundings and eating good clean food, nine months ago had pain in the abdomen, lasting for seven months, continuous and not influenced by eating or drinking. His appetite was poor, bowels irregular. His main complaint was a gradually increasing weakness which made it necessary for him to stop working two months ago. A month ago he noticed a discoloration of the skin. He has lost some weight, but is not emaciated. There is a slight goiter present, but no eye symptoms of any kind. Pulse is usually about 80. Heart and lungs are negative. The discoloration is most marked on the abdomen and back. The genitalia are quite pigmented, also the lower extremities. No pigmentation on mucous membrane. Blood findings show slight anemia. There is a little general pruritus. Temperature is normal. Palpation of the abdomen is negative. The weakness is the only symptom of which he complains. His blood-pressure is between 100 and 105. Stomach contents normal. Urine negative. Diagnosis: Addison's disease, based on, first, weakness for which there is no good explanation; second, abdominal distress; third, pigmentation of skin. Vagabond's disease excluded by personal habits and failure to recover with tonic. Abdominal tuberculosis or other abdominal diseases excluded by negative abdominal findings and absence of temperature.

Dr. Frank Billings: This young man is 25 years old and gives the following history of himself: About four years ago he contracted what was called malarial fever while working in a railroad gang in Arkansas. This illness confined him to his bed for three or four months, and from all accounts was possibly a double infection of malaria and typhoid fever. While in bed he says there was dead-like feeling of the right lower extremity and later of the left also. When he arose after this illness both legs were swollen and the swelling was greater in the evening than in the morning. Following this, the superficial veins of the legs and later of the groins and belly became enlarged. Ulcers formed on the legs, for which he came to this hospital for treatment.

At this time you notice that the legs are edematous and swollen and are covered by bandages to protect the varicose ulcers. The superficial veins of the thighs are apparently not enlarged. The epigastric veins, the radicals of the umbilical and the radicals of the intercostals, the internal mammary and probably those passing inward along the intercostal spaces to the azygos major and minor are visibly enlarged and varicose. The veins of the neck, arms and shoulders and upper chest are not visibly enlarged. By manipulation you will see that the blood in the veins is passing from below upward. This establishes the fact that the obstruction in the veins which causes this collateral circulation is below the heart. If the obstruction were in the innominate or superior vena cava with enlargement of the veins of the belly, as sometimes occur, the current of blood would flow downward.

Where in the belly is the obstruction? It must be in the iliac veins or possibly in the inferior vena cava. If in the inferior vena cava, where is it? Our anatomical knowledge will help in the solution of the question. You will recall that the left spermatic vein empties into the left renal vein. If the obstruction were in the vena cava about the entrance of the left renal vein, he should have a left varicocele. You will notice that there is no enlargement of the veins of the testis. Therefore, the obstruction is below the renal veins if it is in the vena cava. The obstruction may be in the vena cava near the junction of the iliac veins, or it may be in the iliacs.

The patient was admitted to the surgical department for the varicose ulcers. These may be healed under rest with elevation of the extremities and proper surgical dressings. Surgery cannot do more for him because Nature has attempted to relieve the condition by the establishment of a collateral circulation through the enlarged veins which we see.

We cannot interfere with this. Possibly he may be made more comfortable by the use of elastic stockings on his legs and a support of the abdominal veins by means of a loose elastic bandage.

Dr. D. N. Eisendrath: CASE 1.—This woman had a tremor so marked that she was unable to continue in her service as a maid. Her pulse varied between 130 and 150; had exophthalmus very marked, bilateral enlargement of the thyroid and marked enlargement of the isthmus; marked tremor of the tongue and extremities. I removed the right lobe of the gland and the isthmus and ligated the inferior and superior vessels on the opposite side. She has improved at least 50 per cent, and has resumed her duties. She still has quite a degree of exophthalmus; pulse is now 96 to 98.

CASE 2.—This is a case of well-marked carcinoma of the floor of the mouth and tongue. The submaxillary glands or internal jugular group of glands are not enlarged, but there is one small gland down the middle of the neck.

CASE 3.—About eight months ago this patient first noticed the enlargement of his left testicle. It is undoubtedly a sarcoma. There is also a prominence below the left costal arch, probably a metastasis in the retroperitoneal lymph-nodes, with perhaps metastases in the kidney and spleen.

DISCUSSION ON THE PAPER OF DR. MUSSER

Dr. F. Tice: In the discussion of Dr. Musser's paper I shall limit my remarks to chiefly one phase of the disease—the cardiac condition. Parry, in 1815, described the pronounced heart manifestations associated with exophthalmic goiter; this patient died later of cardiac failure. Graves, Basedow and many of the earlier observers appreciated the pronounced and important rôle of the heart in goiter. One of the best and more recent contributions was made by Kraus in 1899, in the introduction of the term "Kropfherz," goiter-heart or thyroid-heart.

Practically in every case of goiter, regardless of variety, the heart is more or less affected. The cases may be divided, according to Hirschfelder, into four groups:

1. Those due to mechanical influence by pressure on the trachea, bronchi, vessels or nerves.
2. Hypothyroidism (myxedema, cretinism and achondroplasia).
3. Hyperthyroidism (exophthalmic goiter).
4. Goiter secondary to cardiac disease.

From personal observations of a considerable number of patients with particularly thyroid hearts, I can hardly agree that all forms of goiter are essentially medical cases. Undoubtedly, many can be improved and some of them cured by appropriate medical treatment, but at least a large percentage do much better by surgical intervention.

Dr. A. J. Ochsner: In determining the treatment of a given case of goiter we must consider the degree of toxicité from which the patient is suffering. We have found in our cases that sometimes this toxicité is very slight, as, for instance, in patients at puberty, due to the temporary disturbance in the physiologic development of the patient. In a large majority of these cases, in almost all of them, the hyperthyroidism subsides spontaneously or under treatment. I would insist, first, on rest, physical, mental and emotional rest. Unless all of these are included the hyperthyroidism will be increased, and then the time will come when the balance is against the patient and the hyperthyroidism cannot be removed by any form of non-surgical treatment. I would say that operation is almost never indicated in cases occurring about the time of puberty.

These patients recover permanently, provided this form of treatment is maintained. We must also keep in mind the matter of diet. These patients do better under a vegetable and fruit diet than under a meat diet. We must eliminate tobacco, alcohol, tea and coffee because they increase the toxic effect of the hyperthyroidism.

We must also bear in mind that hyperthyroidism practically always occurs in waves. Patients who are severely ill show these waves, the hyperthyroidism becoming more intense and then subsiding somewhat and becoming less intense. If you operate at the crest of the wave, because you feel that if you do not the patient will surely die, you are making a serious mistake. Let the patient pass over the wave and operate when his condition is again at the cbb. The patient will get well without the slightest difficulty. We must select our cases and operate not because of the fact that a given case is suffering from exophthalmic goiter, but because we cannot effect a permanent cure by the dietetic and rest treatment. We must select the operation which does not transgress the margin of safety, removing as much gland only as the patient can stand, or doing only what can be done with safety, and then the mortality will be reduced considerably. It is now less than one-fourth what it was before we recognized the value of this practice.

Dr. George F. Suker: The eye symptoms associated with exophthalmic goiter are unfortunately depended on too much in arriving at the diagnosis of this condition. I do not consider the eye findings as absolutely essential for a diagnosis. Neither is it necessary to have the entire eye findings manifest themselves in rotation in order to make a diagnosis of exophthalmic goiter. Every one of the extra-ocular eye findings can be produced by orbital conditions other than those accompanying goiter. It is the influence of hyperthyroidism on the sympathetic nervous system which gives to the ocular symptoms their characteristic diagnostic value.

The sympathetic nerves act as a check upon the various motor nerves supplying the intra-ocular and extra-ocular muscles, thereby allowing a uniformity and evenness of action in the synchronous correlated movements of eye and lid, and also in a measure in the movements of the two eyes themselves as in convergence, sursumvergence or deorsumvergence. Then, too, it is the exophthalmus, produced by any other cause than goiter, which can produce symptoms closely resembling the Van Graefe, Moebius, Stellwag and Gifford symptoms, excepting the characteristic jerkiness of a true Basedow's, due to sympathetic nerve involvement.

The Van Graefe, Moebius, Dalrymple, Stellwag and Gifford signs are each more or less dependent on the exophthalmos for their intensity. The more marked the exophthalmos and the more marked the sympathetic nerve involvement the more pronounced are these signs. Indeed, it is often impossible to elicit a characteristic Moebius, Stellwag or Dalrymple in the absence of an exophthalmus, even though the sympathetic is involved.

The extra-ocular signs may be unilateral or bilateral, more pronounced on one side than on the other, irrespective of the size of the thyroid enlargement on either one or both sides of the medial line—though usually they are corresponding.

The more marked the nervous irritability of the patient the more pronounced are the lid symptoms when present.

The exophthalmos never disappears entirely. At first it may recede very markedly, but being dependent in a large measure on the hypertrophy of the orbital tissue, outside of the capsule of Tenon, a complete recession never obtains. The other lid symptoms and Moebius sign do disappear on the cure of the disease. Indeed, a lessening of the eye symptoms is an index to the prognosis.

The lids very frequently evidence the characteristic pigmentations and often show the sweating.

The corneal ulcerations and conjunctivitis now and then present are largely due to the undue exposure caused by the exophthalmos, and are not dependent on the hyperthyroidism *per se*. The enlarged conjunctival vessels are dependent on the exophthalmos and the sympathetic involvement.

There are no characteristic fundus findings in goiter; and unless the element of arteriosclerosis is quite pronounced, associated with high blood-pressure, retinal hemorrhages never occur. Optic neuritis, iritis, cyclitis and chorioiditis, if present, are incidental findings and are not dependent on the hyperthyroidism. At least, no conclusive proof has ever been produced that such is the case. Indeed,

the entire intra-ocular lesions now and then found in goiter are dependent on the diabetes, Bright's and arteriosclerosis, which quite frequently are associated with the hyperthyroidism.

The only optic-nerve involvement possible is a toxic optic neuritis, due to the excessive thyroid secretion, and yet no such case has ever been reported or seen, though many an observer has looked for it.

One lid symptom, namely, the Gifford sign, is valuable. It consists in the increased difficulty in everting the upper lid when the patient is looking down. This resistance is due to the tonicidity of Muller's muscle, innervated by the sympathetic. Though the sign is easily demonstrated, yet in the presence of the exophthalmos it is very marked. I am happy to state that Dr. Gifford is a good American, so that not all eye signs and symptoms of goiter are of foreign birth.

The essential points that this discussion wishes to impress is that the eye findings in goiter are not pathognomonic, are not always uniform, and are dependent on the hyperthyroidism and the implication of the sympathetics and unstriated muscles of the lids and orbit. Again, that the characteristic phenomenon in these lid symptoms is their "jerkiness."

CHICAGO MEDICAL SOCIETY—SOUTH SIDE BRANCH

Special Meeting, Feb. 8, 1912

The South Side Branch held a special meeting Feb. 8, 1912, in the Chicago Public Library under the joint auspices of the South Side Branch, the Chicago Woman's Club and the *Chicago Tribune*, with Dr. T. A. Woodruff in the chair. The program consisted in a symposium on "The Prevention of Blindness and the Conservation of Vision." The following papers were read: Dr. T. A. Woodruff addressed the meeting on the subject of the symposium. Dr. William H. Wilder read a paper on "Dangerous Infections of the Eye." Dr. Frank Allport read a paper on "Conservation of School Children's Eyes." Dr. J. R. Cravath read a paper on "Illumination and Vision." Dr. Willis O. Nance read a paper on "Prevention of Blindness." Dr. R. J. Young read a paper on "Prevention of Injuries to the Eyes in Steel Mills." Dr. Hyman Cohen read a paper on "The Cost of Preventable Blindness to the Nation." Dr. Caroline Hedger read a paper on "Midwives and Blindness."

For text and discussion of these papers see page 399, *et seq.*

JACKSON COUNTY

The February meeting of the Jackson County Medical Society was held in the parlors of the Logan House, Murphysboro, Thursday, Feb. 29, 1912, at 1:30 p. m. The following members were present: Drs. Sabine, Ormsby, Horsman, Carter, Daniel, Wayman, Essick and Molz, Murphysboro; Mitchell, McAnal, Neber, Whitacre, Thompson and Barrow of Carbondale; Tweedy and Hiller of Vergennes. The society has taken up the postgraduate work as outlined by the A. M. A. with a great deal of enthusiasm, and has two classes meeting weekly, one at Murphysboro and one at Carbondale. As this did not start until Jan. 1, 1912, they are not following the lessons strictly, but have picked out the best to finish this year and will follow the outline closely next year. Dr. Molz presented the subject of "The Indications for Operative Treatment of Fractures." Discussed by Mitchell, Ormsby and Sabine. Dr. Ormsby presented "Treatment of Compound Fractures." Discussed by Thompson, Essick, Miller, Molz and Mitchell. The essayist on the subject, "Treatment of Fracture Dislocations of the Knee Joint," being absent, this was discussed by several of the members present, as was the treatment for fractures in general. Meeting adjourned to meet at the call of the program committee in March, at which time we hope to have Dr. Charles Reed of Cincinnati visit the county and give his lecture on "Medical Education," which he is delivering under the direction of the A. M. A.

CHARLES MOLZ, Secretary.

MADISON COUNTY

The Madison County Medical Society met in Edwardsville on March 1, and was well attended, the following members being present: Drs. Oliver, Beard, Cook, Burroughs, Ferguson, Pfeifferberger, Schmidt, Hirsch, Dorr, Smith, Hastings, J. W. Scott, Sims, Sutter, Wharff, Barnsback, Wahl, Robinson, Kiser and E. W. Fiegenbaum. Visitor, Dr. O. O. Gibberson of Alton. A committee on public health education was appointed by the chair, consisting of Drs. Smith, Tulley and Burroughs. It was also ordered that our April meeting be held at Collinsville, our June meeting at Godfrey and our July meeting at Highland. The May meeting, in the form of a banquet, was, by a previous vote, assigned to Alton on the request of the members from that city. The guest of the society and speaker of the day, Dr. Willard Bartlett of St. Louis, delivered an address on "The Surgical Treatment of Exophthalmic Goiter," which was highly instructive, and was received by all present with rapt attention. He said in part that little was known as to the cause of hyperthyroidism, and the little that we did know was fragmentary and unscientific. He was inclined to believe that it was some unknown primary cause acting through the central nervous system; something back of the thyroid causing excess of secretion, which was poured out into the circulatory and central nervous systems. He expressed his belief that the disease is often overlooked and that our old chronic nervous cases, with one or more of the cardinal symptoms, such as fast pulse, tremors, goiter and excessive nervousness, are really cases of Graves' disease. In these cases a rapid heart beat is nearly always present, leading to hypertrophy or dilatation and ultimately to the wearing out of the heart. Permanent tachycardia is a bad symptom, and the speaker does not believe such patients get well. The prognosis is nowhere less certain than in untreated cases of this affliction; some get entirely well after the gravest outlook and others die who were not considered in a serious condition; some get well with very little treatment and others resist all forms of treatment except the surgical and not all of those operated on get well. Treatment consists of medical and surgical measures with some mild cases which should be allowed to continue their work, if they can comfortably do so, without any treatment at all. The medical treatment does not demand drugs, but consists of complete physical and psychical rest in bed, isolated even from the family, with ice on thyroid and chest to slow the pulse. Some of the worst cases are too bad for surgery and should be treated as above, and will sometimes get entirely well. Some will improve temporarily, only to relapse. Some internists insist on putting such patients to bed for an entire year, but the speaker strongly advises against such measures, because in some cases melancholia was induced, and some damage was always done by these excessive rest periods, producing rarefaction of bones, atrophy of muscular system and depression generally. The surgical treatment, in cases where there is no loss of compensation, consists of ligating one thyroid artery, under gas or local anesthesia, and a week later ligating the other artery. This is only of temporary benefit, but puts patients in better condition for excision of goiter a few months later. The radical remedy is the removal of the goiter and can be safely done, even when patients have a degree of exophthalmos and hypertrophy of the heart, but should never be undertaken when there is dilatation. Dr. Bartlett explained the technic of the operation very clearly and in detail, much to the gratification of his delighted audience. He was given a unanimous vote of thanks and hearty invitation to visit us again at a future meeting.

E. W. FIEGENBAUM, Secretary.

M'LEAN COUNTY

The regular meeting of the McLean County Medical Society was held in council chambers, Bloomington, Feb. 1, 1912. The president and vice-president being absent, Dr. F. C. Vandervoort was elected president pro tem. The minutes of last meeting were read and approved. The board of censors reported favor-

ably on the following applicants for membership in the society: Drs. J. I. Henline and John J. Condon, Bloomington; William McIntosh, Anchor, and G. W. Rudolph, Cooksville. On motion, report was accepted and membership granted to the above-named gentlemen. Dr. James B. Taylor having recently moved to Eugene, Ore., on his request was granted a transfer certificate to the Lane County (Oregon) Medical Society. Dr. E. P. Sloan read a very interesting paper on "Review of the Surgery of 1911."

NORTH CENTRAL ILLINOIS MEDICAL ASSOCIATION

The thirty-eighth annual meeting of the North Central Illinois Medical Association was called to order by the president, Dr. A. E. Owens of Princeton, at 10:50 a. m., Dec. 5, 1911, in the city hall at Dixon. Roll call of members showed present Drs. A. E. Owens, president; George A. Dicus, secretary; C. C. Hunt, E. S. Murphy, William O. Ensign, J. F. Percy, Ezra F. Goble, second vice-president; T. W. Burrows, first vice-president; S. O. Hendricks, A. B. Middleton, C. M. Cheadle, C. A. E. LaSage, E. B. Owens and Drs. Parker of Peoria, Emory Lanphear, St. Louis, and later Bertram Sippy of Chicago, invited guests.

The minutes of the previous meeting were read and approved. The treasurer's report was read and referred.

Dr. A. B. Middleton, in behalf of the Livingston County Medical Society, extended an invitation to the association to hold its thirty-ninth annual meeting in Pontiac in 1912. Moved and carried we accept the invitation and refer to nominating committee. The local committee of arrangements, by their chairman, Dr. C. C. Hunt, reported that the visiting physicians would be the guests of the physicians of Dixon at a banquet at 6:30 p. m., at the Elk's Club, followed by entertainment.

The following communications were read: Dr. J. C. White regrets not being able to attend and sends best wishes.

Dr. J. M. Kaiser sent regrets, as recent operation prevented his coming.

Dr. W. Griswold of Princeton requests to withdraw. It was moved that the request be granted. Carried.

The regular program was taken up, Dr. A. B. Middleton of Pontiac reading a valuable, instructive paper on "Important Eye Symptoms in Albuminuria of Pregnancy," and presented some excellent drawings to illustrate. A general discussion followed by Drs. LeSage, Goble, Percy, Dicus, Cheadle, E. B. Owens, C. C. Hunt, and Middleton to close. Adjourned to meet at 1:30 p. m. Called to order at 1:30 p. m.

THE RESULTS OF THE TREATMENT OF CANCER OF THE UTERUS BY THE ACTUAL CAUTERY

WITH A PRACTICAL METHOD FOR ITS APPLICATION

JAMES F. PERCY, M.D.

GALESBURG, ILL.

(Author's Abstract)

Percy improves the technic in using the actual cautery in otherwise inoperable cases of cancer of the cervix and body of the uterus, as follows:

1. The abdomen is prepared as for any abdominal operation.
2. The patient is put in full Trendelenburg position.
3. An abdominal incision is made just sufficient to admit one or two fingers of an assistant into the pelvis; in the thin patient, one finger is enough.
4. A fever thermometer indexed to register at least 250 F. is introduced through the urethra into the bladder after the urine is removed by catheter. A second similar thermometer should be in readiness for use in the rectum, if it is necessary to cauterize deeply posteriorly. The fingers can be used here also, and practically may be all that is necessary.

5. The cautery is applied in the vagina through a speculum after the pattern of that of Ferguson. This speculum is made on the plan of a Thermos bottle.

6. There is no use of attempting this work unless the cantery used is perfect in its action, i. e., has more heat under control and at command than will ever be required.

The author refers to the use of the cautery in this disease twenty years ago by the late Dr. John Byrne of Brooklyn, N. Y., and commends it.

Percy bases his technic on the statement of Loeb, that a section of mouse cancer, when frozen, will grow again when transplanted; but if the temperature of a control section is raised to 113 F. plus, it cannot be successfully grown. A special form of heavy cautery is used which will raise the temperature in the pelvis to 120 F. plus. The author shows that by the technic described, the use of the cantery can be made just as accurate and finished as when the knife is used. His article is accompanied by a table of results. He closes as follows:

"If all cases of cancer in the region of the body under consideration were submitted to the improved cautery operation here described, I am more than convinced that we would obtain not only the advantage of no primary mortality; but, in addition, a largely increased percentage of lives greatly prolonged in comfort, with freedom from hemorrhage, exhausting and offensive discharge and mental distress. More than this, an appreciable number of symptomatic cures extending over a period of years would result."

Dr. Lanphear, in discussion, claimed that the high mortality from the knife is due to cases reaching the surgeon too late. He reported having done the second case of hysterectomy in America in 1892, in which he tied off both ovarian and uterine arteries; the parts sloughed out and the patient was living eighteen years later. Dr. Lanphear says he has long since abandoned the knife for the lip, nose, etc. He uses the Paquelin cautery. Dr. Burrows and Dr. Sippy continued the discussion.

Dr. Percy (in closing) cited Lloyd's theory of twenty years ago, that cancer cells will not grow when once heated to a certain temperature. The only early diagnostic signs is hemorrhage, and if mucous membranes are attached and cannot be moved it is cancer.

Dr. Bertram W. Sippy then gave his characteristic exhaustive and interesting paper, "When Should Gastric or Duodenal Ulcer be Treated Surgically, When Medically"? He called attention to the following points: Many cases have been operated on without proper cause; the supposition that food traveled new way made for it until ulcer healed is found incorrect. The old way must have comparatively free exit, but if mechanically obstructed then operate; should not be treated surgically until you have been treated about seven times medically.

1. Is ulcer present? Three to 5 per cent. of autopsies show signs or scars. They may be latent and first sign be perforation; generally have pains after meals and vomiting and may have hemorrhage. Many types, dyspeptic, vomiting, hemorrhages, stenosis. Blood occurs in only 15 per cent. of cases and is often late.

2. What complications exist?

3. Where located?

4. How long has it existed? If carcinoma present becomes surgical the same as in pyloric obstruction of high grade. In continued secretion medical treatment fails, as it is not kept up at night. Location, 80 per cent. on lesser curvatures or posterior wall; the posterior wall ulcer has tendency to get well whether treated or not.

Relative frequency has been considered: one duodenal to nine or ten gastric, but newer pathology shows duodenal equal to or more than gastric.

According to Virchow, 37 per cent. of carcinoma is in the stomach and 10 per cent develops at seat of ulcer. Medical treatment consists of *rest and drugs*; diet with cream, as it is the most palatable; rest, four or five days' starvation, then begin one-half ounce of cream and milk each hour first day; 1 ounce each of cream and milk each hour second day; 1½ ounces each of cream and milk each hour

third day. Then add eggs; after three weeks add cereals and two or three eggs a day, which satisfies nutrition and the patient gains in weight. Medicines, bismuth 5 drams in the morning.

Discussion by Drs. Parker, E. S. Murphy and Percy.

Dr. George Parker of Peoria gave an interesting paper entitled "The Treatment of Tetanus by Magnesium Sulphate, with Report of Cases." As magnesium sulphate can produce paralysis, and as death is produced in tetanus from increased activity, hence the theory for its use. One case used 10 c.c. 10 per cent. solution magnesium sulphate and increased to 20 c.c. To a child 20 months old he gave 4 drams of a 25 per cent. solution in abdominal wall and repeated in six hours for seven days, and then two to four injections a day. After the last spasm he continued injections for four days. The dangers of cardiac depression may be overcome by physostigmin.

Dr. Emory Lanphear, in his characteristic way, gave an amusing and interesting report on "Impressions of the Second Clinical Congress of Surgeons of America." He says deaths from ether are occurring which are never reported. He thinks he saw more silk used in buried sutures in these two weeks than in other places in twenty years.

Discussion by Drs. Goble and Percy, who said he attended the congress in Philadelphia for ten days, and while he saw much there, he felt he had gotten more here to-day than in ten days there.

Moved by Dr. Ensign that a rising vote of thanks be given to Drs. Sippy, Lanphear and Parker, and that they be made honorary members of the N. C. I. Medical Association. Carried.

Dr. L. O. Hendrick of Henry gave an interesting paper entitled "The Consumptive Predisposition," the discussion of which was taken up by A. B. Middleton, in the absence of Dr. Pettit. He called attention to there being no law to prevent a tubercular child to sit by the side of a healthy child in school. Drs. Burrows and Ezra T. Goble continued the discussion, and Dr. Hendricks, in closing, recited the case of his wife who had father, sisters and one brother die of consumption, but she was saved by being properly protected, nourished and plenty of air.

Dr. John F. Keefer gave the necrologic report of Dr. Frank Anthony as follows:

FRANK ANTHONY, M.D.

Saturday night, April 8, 1911, Dr. Frank Anthony of Sterling, Ill., was summoned and passed to the great beyond. Death came in Augustana Hospital, Chicago. For several years after the Cuban War, Dr. Anthony was in poor health from disease of the bowel and liver; at times jaundiced. Later he gained in many ways until about a year ago, when he began to show failing strength and presented his case to medical men for aid. He kept up his usual work until early in March, when he was compelled to ease up. Several weeks later he went to the hospital for rest, examination and treatment. After a number of noted men had passed on his case, he concluded to submit to an operation, with the hopes of some relief from bowel and liver trouble. Dr. A. J. Ochsner operated. Exploration revealed a serious state of affairs, and he was closed up surgically without further operative work. He rallied for a day or two only, when he showed great weakness, and the end was apparent. Friends and relatives were summoned and were with him to the end. He was in a state of coma for the last two and a half days. The funeral services were held in his own home in Sterling, in charge of the Masonic order, of which he was a member, and aided at the cemetery by the Spanish War veterans.

Dr. Frank Anthony was born March 9, 1859, at Sterling. His ancestry traced back to Old Mother England. He attended the Sterling school and Beloit College, and took his medical degree at Rush in the spring of 1881. He immediately associated himself in medical practice with his father, and excepting the time spent in Cuba, followed an active professional career all his days in Sterling in his boyhood home. He was married twice and had two daughters by his first wife. His wife, two daughters, three sisters and a brother survive him.

Dr. Frank Anthony was a member of the Presbyterian Church and Phi Brotherhood. He was a charter member of Company E, Sixth Regiment Illinois National Guard and was its first lieutenant. Later he was appointed surgeon of the Sixth Regiment, with rank of major. He served as major during the Debs railway strike in Chicago in 1894. He went with that company to Porto Rico in the Spanish-American War, and was mustered out of service in October, 1898. He continued, however, with the National Guard for about two years, when he resigned. In his professional life he was local surgeon for the C. & N. W. Railway for a number of years. He was also one of the promoters of the Whiteside Hospital. He held memberships in the Western Surgical, Gynecological Society, American Association of Railway Surgeons, A. M. A., Illinois State Medical Society, Whiteside County Medical Society and Twin City Medical Club of Sterling and Rock Falls.

Dr. Anthony was devoted to his family and kin and to his friends, and was held in esteem in his community. He was called to hundreds of homes to relieve disease and his practice was characterized with much skill and success. In later years he did a larger consulting practice and was frequently called to distant towns. As a citizen, he always took an active interest in public affairs and politics. Always a staunch Republican, and always decisive in his views and not afraid to express them in regard to public questions or politics. He possessed a high and noble character and believed in a clean life, and stood for the best and right thing in life, and was an excellent home and family man, as well as a splendid citizen. In the passing of Dr. Anthony the county lost one of its best citizens, the profession one of its stalwart members. His death came as a pall of sorrow over the whole city and community, and to the bereaved widow, children and relatives the whole community extends its most profound sympathy.

Moved by Dr. Ensign that the report be placed in the archives of the association, and that Dr. Keefer be required to draft resolutions to be acted on at this meeting. Carried.

An intermission of five minutes to select nomination committee resulted as follows: A. E. Owens, Bureau County; S. O. Hendrick, Marshall County; C. C. Hunt, Lee; William O. Ensign, La Salle; A. B. Middleton, Livingston; J. F. Keefer, Whiteside. Putnam, Woodford, Grundy, Kendall and DeKalb no representatives.

The Board of Censors reported the treasurer's report and books to be O.K. Moved and carried that the report be accepted. A recess of five minutes for the nominating committee to get their report ready. Called to order again, and Dr. J. F. Keefer read the following resolutions, which were approved as read. The nominating committee reported as follows: The secretary moved that the name of Dr. Ensign be inserted in place of the name of Dr. Dicus, and that the report be then accepted, which was lost for want of a second. It was then moved that the report be accepted, and that Dr. Middleton, secretary of nominating committee, cast the ballot of the association for the offices named. Carried. The following were declared elected: president, T. W. Burrows; first vice-president, Ezra T. Goble; second vice-president, C. C. Hunt; secretary-treasurer, George A. Dicus. The Board of Censors to be named by the secretary; necrologic committee to be named by the secretary also. Place of meeting, Pontiae.

Moved by Dr. Ensign that the secretary drop the names of those delinquent for five years for dues. Carried. As a result the following names were dropped according to Article VI, Section 4: John F. Crowley, La Salle; Herrick, La Salle; Hathaway, Ottawa; E. F. Milligan, Ottawa; J. J. Pearson, Pontiae; A. C. Purcell, Streator; A. J. Roberts, Ottawa; Sterrett, Marseilles; Stebbings, Marseilles. Moved we adjourn to meet at 6:30 at Elk's Club for banquet. From 6:30 p. m. to 11 one of the most sociable and enjoyable times were had by the association. The local physicians, their wives and daughters and citizens did all in their power, which made things a howling success. The following menu was served: Olives, salted peanuts, celery, roast turkey, potatoes, peas, ice cream, cake, coffee. Dr. C. C. Hunt, toastmaster. Rev. A. A. Manwaring, benediction. Hon. W. B. Brinton.

address. A. E. Owens M.D., on behalf of the North Central Illinois Medical Association. Dr. W. O. Ensign, "The Early Days of the North Central Illinois Medical Association." Dr. C. C. Hunt on behalf of Lee County doctors. Mr. L. W. Mitchell. Prof. W. R. Snyder, "Medical Inspection of Schools." Mr. Harry Edwards, "Expert Testimony." Smith's Orchestra: Orchestra (selected); Miss Orla Stettler, solo (selected); Mrs. W. W. Gilbert, reading; orchestra (selected); Mrs. W. R. Parker (selected); orchestra (selected).

Dec. 6, 1911, meeting was called to order at 9:30 a. m. Members present: Drs. C. C. Hunt, E. S. Murphy, A. E. Owens, C. A. LeSage, E. B. Owens, J. A. Nowlin, William O. Ensign, George A. Dieus, A. B. Middleton, S. O. Hendricks, George Powell, Clinton Ives. The applications of Drs. Clinton H. Ives and George Powell of Dixon to become members were read and referred to the Board of Censors. The report being favorable, it was moved by Dr. Ensign that the secretary cast the ballot of the association for Drs. Ives and Powell as members of the North Central Illinois Medical Association. The ballot was declared clear and the candidates accordingly elected and their names enrolled as members. The following resolution by the nominating committee was read by Dr. Middleton and adopted as read:

Resolved, That we, the members of the North Central Illinois Medical Association present, in this the thirty-eighth annual session, extend a vote of thanks to the local medical profession of Dixon for the painstaking entertainment and the elegant banquet they gave to us, which was so beautifully served by a party of Dixon's fairest young maidens, as well as to thank the city for the use of the council room in the city hall, in which to hold our meetings; to the members of the local Elk's lodge for the use of their beautiful parlors and banquet hall, as well as to the ladies that rendered the readings and musical parts on the program for our entertainment.

A good, hearty, helpful and interesting discussion for the good of the North Central Illinois Medical Association was now indulged in, and some present expressed themselves as having at one time felt that the North Central Illinois Medical Association was a superfluity, but were now thoroughly convinced that it was not only a good thing, but a necessity, as it filled a place and in a way that no other society did. The secretary reported that Dr. A. E. Owens had paid up the amount necessary to reinstate and also \$5 in addition, which would make him a life member, and also Dr. C. C. Hunt and the secretary had paid life membership, and that certificates would be issued for next meeting in 1912.

The following amendment to Article II, Section 2, was read and laid over to next meeting for action: To amend Article II, Section 2, Constitution, to omit the last clause, viz., "and must be a member of the county society in the county in which he lives if one exists."

Moved that a vote of thanks be extended to Dr. A. E. Owens for the able way in which he has conducted this meeting. The program being completed, Dr. David S. Fairchilds, C. C. Rogers, E. E. Perisho and M. H. Blackburn having not appeared nor sent any excuse, excepting Dr. Fairchild, and the president-elect not being present for installation, the meeting adjourned to meet at Pontiac, Dec. 3, 1912.

Resolutions on the death of Dr. Frank Anthony were read and acted on as follows:

WHEREAS, In His wise providence it has pleased the Great Maker and Ruler of us all to remove from his field of activity our friend and professional associate; and

WHEREAS, In our association with Dr. Anthony we loved and respected him for his many admirable qualities; and

WHEREAS, We recognized in Dr. Anthony a vigorous, progressive and conscientious practitioner; and

WHEREAS, As a society we recognize the loss of a valuable member; be it

Resolved, That a copy of these resolutions be spread on the minutes of the meeting of this society, and that a copy of the same be tendered his family.

J. F. KEEFER, Committee.

PULASKI COUNTY

The Pulaski County Medical Society met in adjourned meeting at the office of Dr. C. J. Boswell, Mounds, Feb. 6, 1912. The meeting was called to order by the president, Dr. B. A. Royall, Villa Ridge, and after dispensing with the regular order of business, the following papers were read and discussed thoroughly: First, paper on "Diagnosis, Prognosis and Treatment of Pneumonia." Second, paper on "Diagnosis, Prognosis and Treatment of Diphtheria, Opinion as to Quarantining and Best Method," by Dr. C. J. Boswell, Mounds. This was a very interesting meeting and the society started again with renewed energy. The following members were present: Drs. B. A. Royall, L. F. Robinson, W. C. Rife, C. J. Boswell, Otis Hudson, J. F. Hargan, Hall Whiteaker and S. T. Sealy. Adjourned to meet Tuesday, April 2, 1912.

B. A. ROYALL, President.

HALL WHITEAKER, Secretary.

ROCK ISLAND COUNTY.

Regular meeting of the Rock Island County Medical Society was held Tuesday evening, Feb. 13, 1912, at East Moline commercial rooms. Minutes of the December meeting were read and approved. The following resolution was adopted:

WHEREAS, The Rock Island County Medical Society has, in the death of Dr. William B. Martin of Sherrard, Ill., met with the loss of a valued member; and

WHEREAS, We appreciated his ability as a physician and his sterling worth as a man and do deeply deplore his passing; therefore, be it

Resolved, That we tender these resolutions to the wife and daughter as an expression of our sympathy, and that the above be spread on the minutes of our society. W. H. LUDEWIG, EMILY WRIGHT, W. D. SNIVELY, Committee.

Dr. C. E. Donahoo, East Moline; Dr. L. C. Moore, Reynolds, Dr. H. J. Smith, Watertown, and Dr. M. C. Hawley, Watertown, were elected to membership. The application of Dr. John A. Rose, Moline, was received. The following bills were allowed: New Harper Hotel, Driffel Printing Co., Ladies' Aid Society, East Moline, suppers and cigars. Dr. William D. Chapman of Silvis then read a paper on "Infant Feeding." This was followed by Dr. Bayard Holmes, Chicago, on "A Certain Disease of the Biliary Tracts and Their Surgical Treatment." Both papers were very entertaining and were freely discussed. A vote of thanks was given to the East Moline ladies and physicians for the excellent supper and entertainment. The meeting was one of the most enjoyable and profitable the society has ever had. Present: Drs. Eddy, Sargent, Rochow, Love, Donahoo, Norman, Hinman, Long, Ellingsworth, Johnson, Leipold, Chapman, Smith, Clarke, Peterson, Williams, Ludewig, Sala, Snively, Seids, Ostrom, Hall, First, Beck, Mueller. Guests, B. Holmes, Chicago; J. A. Ross, Moline; L. W. Littig, Davenport; E. B. Gilbert, Geneseo; F. A. Andreen, Orion; Dr. Gamble, Watertown; F. J. Otis, Moline; Dr. Patton, East Moline. ALBERT N. MUELLER, Secretary.

NEWS OF THE STATE

NEWS

—The Galesburg Medical Society elected the following officers: president, Dr. C. E. Quaife; secretary, Dr. E. N. Nash.

—The following are the new officers of the Canton Physicians Club: president, Dr. D. D. Kirby; secretary-treasurer, Dr. William O'Riley.

—The mandamus suit of the National Medical University of Chicago against the State Board of Health for recognition, which was commenced more than a year ago, is now in the Appellate Court.

—The mandamus suit of the Littlejohn College and Hospital against the State Board of Health for recognition as a medical College is still pending in the municipal court and a hearing is expected within the next ten days.

—The officers of the Ottawa Tent Colony have let a contract for new buildings, the cost of which will amount to more than \$25,000. These include offices, a research laboratory, a new medical building and an operating room.

—The German ambassador to the United States, Count von Bernstorff, came to Chicago March 24 and delivered an address at the laying of the corner stone for the new building of the German Hospital at Grant place and Hamilton court.

—At the last meeting of the Illinois State Board of Health the certificate of Dr. Charles B. Bateman, Vandalia, charged with impersonating Dr. George B. Carson, Vandalia, in the examination of the Missouri State Board of Health in July, 1911, was revoked for unprofessional and dishonorable conduct.

—Dr. W. B. Wakefield, who has been in general practice in Heyworth, sailed for Vienna, March 2, to take up the study of dermatology. He expects also to do laboratory work at London, after clinical experience in other European cities. Mrs. Wakefield accompanies him and they expect to spend between one and two years abroad.

—At the third annual dinner of the Society of Medical History of Chicago, held at the Auditorium Hotel, March 15, Dr. Henry B. Favill spoke of the early medical days of Wisconsin, and Dr. Mortimer Frank of medicine as described in English literature before the eighteenth century. There were eighteen members present.

—A new branch emergency hospital at the Chicago Avenue Police Station was formally opened to the public March 12, 1912, in rooms on the first floor to the west of Municipal Judge Maxwell's court. They have been fitted up at a cost of \$800. There are four beds and an operating room. The hospital is equipped with an oxygen generator and appliance for "first aid to the injured." It will be in charge of Dr. Alvin G. Helwig, ambulance surgeon.

—Dr. Milton J. Roseneau, professor of preventive medicine and hygiene in Harvard University, will deliver a course of lectures at the Northwestern University in Evanston, from April 15th to 20th, on "Milk and its Relation to Public Health." The public will be admitted free to these important lectures. The program of the lectures is as follows:

1. The Milk Question, April 15, at 8 p. m.
2. Dirty Milk, April 16, at 8 p. m.
3. Diseases Spread by Milk, April 17, at 8 p. m.
4. Clean Milk, April 18, at 8 p. m.
5. Pasteurization, April 19, at 8 p. m.
6. From Cow to Consumer, April 20, at 8 p. m.

—The management of the Hospital of St. Anthony de Padua, West Nineteenth street and Marshall boulevard, has issued its annual report for the year 1911, from which it appears that during the past year 1,874 patients have been treated in this hospital. Of these, 1,656 recovered, forty-two improved, fourteen did not improve and 162 died. Characteristic of the population of Chicago are the nationalities of the patients treated. Fourteen different nationalities were represented, as follows: American, 1,101; German, 119; Irish, 152; Bohemian, 116; Austrian, 103; Italian, 103; Russian, 60; Canadian, 21; Polish, 78; Norwegian, 6; Swedish, 21; English, 15; Greek, 21; French, 10. This hospital is under the direction of the Franciscan Sisters of the Sacred Heart of Jesus, of Joliet. During the past year a new addition has been opened providing beautiful accommodations for 136 patients.

PERSONAL

Dr. B. Barker, Beeson, sailed for Europe March 19.

Dr. J. W. Pettit, Ottawa, sailed for Europe March 14.

Dr. E. A. Hall, Henry, fell March 3, fracturing his patella.

Dr. C. S. Nelson, Springfield, is ill at St. Johns Hospital, with appendicitis.

Dr. E. W. Wahl, Tampico, slipped on a piece of ice March 7, fracturing his leg just above the ankle.

Dr. P. J. H. Farrell, Chicago, has been elected president of the newly organized Army and Navy Club of Chicago.

Dr. George C. Hunt, chief surgeon of the Chicago Police Department, has been elected a director of the Amicable Accident Association.

Dr. Stanley Castle of Springfield, is spending a few weeks with relatives at Alton before going south to look after his farming interests.

Dr. J. W. Dal of Chicago, has gone to West Olive, Mich., to recuperate after a surgical operation.

Dr. Alvin Helwig, city ambulance physician at Chicago Avenue, was scalded on the head and neck recently by a cup of hot coffee thrown on him by a prisoner in the station.

PUBLIC HEALTH

—Since County Clerk Sweitzer announced to the profession that funds were available for recording births and asked for bills, his office has been swamped by claims. At the present rate the appropriation of \$5,000 will be exhausted within a few months. The following cut shows the first

Birth Record Fund	OFFICE OF County Clerk of Cook County STATE OF ILLINOIS	Birth Record Appropriation
<p>To the County Treasurer of Cook County:</p> <p>This is to Certify that <u>H. G. Ochs M.D.</u></p> <p>has made <u>2</u> reports of births to the County Clerk of Cook County covering</p> <p><u>2</u> births which occurred during the month of <u>February</u>, A. D. 191<u>2</u></p> <p>and is entitled to the sum of _____ Dollars and <u>Twenty</u> Cents,</p> <p>out of the funds in the Cook County Treasury appropriated for that purpose, all</p> <p>of which appears from the records and files in my office</p>		
<p>Approved: <u>Robert M. Sweitzer</u></p> <p>MAR 9 1912</p>		<p>Witness my hand and official seal this</p> <p><u>9th</u> day of <u>March</u>, A. D. 191<u>2</u></p> <p><u>Robert M. Sweitzer</u></p> <p>County Clerk of Cook County</p>

voucher issued. It is estimated that there have been 445,000 births in Chicago since the law was enacted in 1903 providing payment for recording births.

—Last month forty-two nurses out of the staff of 245 at the Cook County Hospital were ill with contagious diseases. The staff is said to be too small to take care of all the patients and their resistance to infection is reduced by long hours and hard work. It is said that practically all the nurses were compelled to work twelve hours a day, although it is illegal to work more than eight hours a day. Dr. Baum, chief of staff, attributed the trouble to a number of diphtheria carriers among the nurses who required to be isolated. He also called attention to the fact that among more than 800 cases that have occurred among the nurses during the past eighteen years there has never been a death from uncomplicated diphtheria. He said there was need for at least 20 per cent. more nurses than are at present employed. More room for scarlet fever cases is also badly needed, and the voters of the city will be called on to vote for bonds to provide for a new hospital.

—An epidemic of typhoid has followed a dance recently held in St. Charles, where more than thirty cases are reported.

On March 4 the Council passed a very important ordinance, one of the most important ordinances passed in a long time.

Under it every physician and midwife must report to the Health Department within 24 hours the occurrence of every case of sore eyes developing within 7 days after birth.

The penalty for failure to report is a fine of from \$5.00 to \$25.00.

We hope we may soon be able to take the next step and supply the nitrate of silver drops for use in all cases in which they cannot be otherwise provided.

There are 60,000 blind persons in the United States.
At least 20,000 of these sad cases
were Preventable!

<p>IF CHICAGO WILL ENFORCE THE USE OF - THIS -</p>	<p>IT WILL COST - THIS - FIVE CENTS</p>	<p>AND PREVENT - THIS -</p>
 <p>THE DROPS" THE MEDICINE DROPPER</p>		
<p>To Lose one's SIGHT is Like Losing LIFE ITSELF. SAVE YOUR BABY'S SIGHT</p> <p><small>Chicago Department of Health - Educational Series No. 91</small></p>		

Katherine Field White.

From the Bulletin Chicago Department of Health.

REMOVALS

Dr. J. G. Meyer of Lincoln, has located in Springfield.

Dr. L. C. Bassett of Farina, has removed to Effingham.

Dr. D. W. Matthaei of Chicago, has removed to Arco, Ida.

Dr. Weisenborn has removed from Quincy to Teutopolis, Ill.

Dr. J. W. Dale has removed from Vernon to Walnut Hill, Ill.

Dr. W. W. Kuntz has removed from New Salem to Baylis, Ill.

Dr. P. I. Cromwell of Effingham, has removed to Arcadia, Neb.

Dr. Elsie B. Menott has removed from Princeville to Boulder, Colo.

Dr. H. R. Sword has removed from Freeport to Milledgeville, Ill.

Dr. P. I. Cromwell of Effingham, has removed to a farm in the state of Nebraska.

Dr. C. D. Hoy has removed from 3530 Lake avenue, Chicago, to Wellston, Ohio.

Dr. Esther E. Sandus has removed from 2053 Augusta street, Chicago, to Van Wert, Ohio.

Dr. F. W. A. Hoffman has gone to Florida to spend several weeks, and on his return will locate in Effingham.

Dr. Stephen A. Hemmi has removed from 2922 Humboldt boulevard, Chicago, to 2611 West Division street, Chicago.

Dr. John N. Bassin of New York City, has located at Virdin, Ill., where he will engage in the practice of medicine.

Dr. F. W. Kerchner has removed from Glen Carbon and is now located at Prairietown, where he has rented Dr. Engel's office.

Dr. Hugo Lindig of Granville, is reported to be mysteriously missing since November. He was last seen in Cherry on the occasion of the second anniversary of the mine disaster.

DEATHS

LEE McCAULEY, M.D., a well known physician who formerly practiced at Alton, died at Hardin, February 21.

WILLIAM H. GEDDY, M.D., a graduate of University of Wooster, 1885, died at Nokomis, Ill., March 18, 1912, aged 89 years.

SUCHER DROZDOWITZ, M.D. (license to practice, Illinois, 1892); died at his home in Chicago, February 21, from angina pectoris, aged 54.

LEE MCAULEY, M.D., a graduate of the University of Missouri, 1898, died at his home in Hardin, Ill., February 21, 1912, from acute nephritis, aged 48.

ALICE C. BELLOWES, M.D., Bennett Medical College, Chicago, 1895; died at her home in Chicago, February 14, from chronic interstitial nephritis, aged 50.

CHARLES G. RAYBURN, M.D., of Kewanee, Ill., widely known among Illinois Elks, died recently in Colorado Springs, Colo., of tuberculosis. Burial was at Roseville, Ill.

EDWIN GLOVER MOREY, M.D., Chicago Homeopathic Medical College, 1886; formerly of Rock Island and Oak Park, Ill.; died in Florida recently from influenza and was buried at Rock Island, February 16.

ANDREW HULL PARKER, M.D. (license, Illinois, years of practice, 1883), of Evanston; for forty-five years a practitioner of Chicago; died in the Evanston Hospital, February 29, after a surgical operation, aged 77.

JAMES H. HEWITT, M.D., University of Buffalo, New York, 1865; surgeon of the One Hundred and Forty-Seventh Pennsylvania Volunteer Infantry during the Civil War; for more than forty years a practitioner of Summerfield, Ill.; died at his home in Lebanon, Ill., February 25, aged 71.

REGAY LESLIE BAKER, M.D., Kentucky School of Medicine, Louisville, 1893; Jefferson Medical College, 1894; a member of the American Medical Association; coroner of Peoria County, Ill., from 1904 to 1908; died at his home in Peoria, February 14, from the effects of a gunshot wound of the head, self-inflicted, it is believed, with suicidal intent, while temporarily insane, aged 40.

J. T. PURCELL, M.D., died at St. Joseph, Champaign County, Sunday, March 10, in his 68th year. He was born in Ohio, served in the Eleventh Ohio Cavalry for nearly six years, completing the longest period of volunteer service of any resident of Champaign County. He graduated from the Indiana Medical College, Indianapolis, in 1869, and has practiced in St. Joseph for thirty-five years. The funeral was in charge of the Ogden Masonic Lodge, and the Champaign County Medical Society was represented at the funeral.

Book Notices

PELLAGRA. By George M. Niles, M.D., Professor of Gastro-enterology and Therapeutics in the Atlanta School of Medicine, Atlanta, Georgia. Octavo of 253 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1912. Cloth, \$3.00 net.

Dr. Niles in this thoroughly practical common sense talk on the disease newly discovered in America, has done a great service to the profession and people, and one which we hope will be amply rewarded by a large sale of the book. He candidly states his position and the limitations on the subject in the following language: "I have no apology to offer for expressing my candid opinions and firm convictions. Should subsequent experience and knowledge convince me that I have fostered error, I shall be the first to announce it and make the necessary amends. No advancement has ever been made except by following a new idea to an established fact, and in the light which is now guiding me I can see no incorrect premise nor any false conclusions; yet I do not expect the approbation of all whose opinions I court and whose words I respect.

"To go forward and not backward in the management of this threatened scourge will require much clinical observation, much laboratory labor, special technic in the examination and treatment of the various phases of pellagra, a practical knowledge of physiology and physiologic chemistry, the medical uses of special drugs, baths, waters, and electricity, and, with it all, time and patience.

"It will be most interesting a few years hence to look back in a retrospective manner on the efforts of to-day, on the possibly erroneous viewpoints with which we have considered pellagra, and our somewhat halting footsteps in its therapeutics. We are glad in this connection however, to lay to our souls the flattering unction that our efforts are at least sincere and justified by present results."

He dedicates it to the medical profession offering it for what it is, and not claiming that it speaks the "last word," but that it represents the labors of a student who is endeavoring with a spirit of courage and optimism to contribute a worthy portion to the sum total of our information concerning pellagra, this American problem.

PRACTICAL ELECTRO-THERAPEUTICS AND X-RAY THERAPY. With chapters on Phototherapy, X-Ray in Eye Surgery, X-Ray in Dentistry, and Medico-Legal Aspect of the X-Ray. By J. M. Martin, M.D., Containing 219 Illustrations. C. V. Mosby Company, St. Louis, 1912. Price, \$4.00.

This work of Dr. J. M. Martin of Dallas, Texas, appears to be a work based on actual clinical experience, and thoroughly practical in every detail. The following extract from the introduction by the author represents in brief the theory of its product, and the aim of the author in placing it before the medical world:

"If electricity is to be of value as a therapeutic agent, we must be so thoroughly conversant with our currents and their physiologic effects as to be able to supply the particular current or currents in such a way as to relieve the abnormal condition. This is not so hard as it appears on first thought. Electricity, as a therapeutic agent, will probably reach its acme in the treatment of diseases of the nervous system. It is the aim and ambition of the author to so present the subject in this volume that the student who really wants to master the subject of this young but important specialty may thoroughly grasp the basic principles, and be able to apply electricity as a powerful weapon against the many diseases and human infirmities from which our people are continually suffering."

We can heartily recommend the work as being just what the ordinary practitioner will need in his daily practice.

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No. 5

ORIGINAL ARTICLES

ALEXANDER HUGH FERGUSON — THE SURGEON *

A. J. OCHSNER, M.D.

CHICAGO.

For one who has known him intimately, it is not difficult to speak of Dr. Ferguson as a surgeon, because he was so full of his life work that it never ceased coming to the front, not only when he was actively practicing his profession, but whenever he met with a kindred spirit. It was the unbounded enthusiasm for his professional activity that attracted me to this sturdy man during the first year of his residence in Chicago, and although we lived far apart we continued to be intimate throughout the years he lived in this city, and we were constantly interested in each other's thoughts and work.

It is always a source of inspiration to come in contact with a man of absolute honesty, of unlimited energy, and of unwavering courage. All of these qualities Ferguson possessed to an unusual degree. He frequently disagreed with the views of one or all of his professional friends but he never hesitated to make the fact perfectly plain. This often gave the impression of harshness, but it was simply the result of his honest enthusiasm and his natural courage to stand for his convictions. He had almost a vicious hatred for the hypocrite, and may at times have gone too far in this direction. If once he was convinced that a man was a pretender, he could not credit him with any good qualities. At the same time he honored and admired an honest opponent, no matter how severely the latter might have dealt with his views, or how harshly he might have criticized the thoughts advanced in his scientific essays.

His mind was intensely active. He never accepted any theory or any method without subjecting it to the most acute criticism and after a thorough study he never hesitated to change an accepted method or to question the soundness of any theory.

* Read at the Ferguson Memorial Meeting of the Chicago Medical Society, Feb. 7, 1912.

To those who were not thoroughly familiar with his mode of reasoning, it often appeared as though these changes were simply incidental or accidental, but nothing could be less in accordance with the facts. He always had a definite, well considered reason for making changes and was willing to accept further modifications if supported by a reasonable argument.

His splendid knowledge of the fundamental medical branches, especially anatomy, physiology and histology, enabled him to comprehend many conditions which are not usually considered in connection with surgical subjects but which have a very distinct bearing upon diagnosis and treatment. Only a few of his friends knew of his proficiency in these subjects as he never spoke directly on non-surgical subjects after taking up his work in this city, and still this unusual equipment had a marked influence upon his scientific work.

Another factor had much to do with developing unusual breadth in his surgical work. After completing his service as student and hospital assistant, in which he distinguished himself by his ability, energy, industry and perseverance, he practiced general medicine and surgery for five years and taught medicine, physiology and histology for three years. He then took up general surgery as a life work.

His great experience as a general practitioner had much to do with developing breadth in his surgical work for which he prepared himself especially by study in the hospitals of Scotland, and by visiting many English hospitals as well as the clinics of Continental Europe. The chief influence in developing the individuality of Dr. Ferguson as a surgeon, aside from his great natural ability and striking personality, came from eight years of intense surgical work in Winnipeg, during which time he taught this subject as Professor of Surgery in the Manitoba Medical College. During this time he also occupied the position of Surgeon-in-Chief of the Winnipeg General Hospital, to which patients came from all parts of Western Canada in great numbers, especially when they were suffering from conditions too serious to be treated by their local surgeons. He had an enormous surgical practice, not only in the work to which general surgeons usually limit themselves, but also in every field of especial surgery, because patients came from towns hundreds of miles away to consult this brilliant young surgeon.

Few surgeons of to-day have so wide a range of experience and so enormous a clinical material as he had during these eight years. I traveled through this country ten years after Ferguson left Canada and the first question I was asked after the practitioners learned that I lived in Chicago, was always concerning Ferguson and the comment was always, "he is a fine man and a good surgeon."

It was only because of his very unusual strength and energy that he was able to bear the physical strain of this enormous practice, and to continue his studies and his teaching.

When he came to Chicago in 1894, thirteen years after his graduation, he had already accumulated a wealth of experience vastly greater than that which comes to the average surgeon in a lifetime. In the

field of surgery for the relief of echinococcus for instance, his personal experience exceeded many times that of all the surgeons of this city taken together.

This unusual preparation enabled him to enter the front ranks of the surgical profession of this city, and to make for himself the enviable name which will long be remembered in this community. I visited his clinic repeatedly in order to become familiar with his methods.

At the operating table it was plain to the observer that he had a clear conception of what he expected to find. His diagnosis had been made accurately and his experience with many similar cases made the plan of operation clear. Almost intuitively he did his work, weighing not only the existing conditions but automatically comparing them with similar conditions with all of their variations which he had frequently encountered during previous operations.

He worked with intense concentration, with accuracy and without waste of time, but also without haste, which always impairs actual speed as well in surgery as in all other forms of activity. It was fascinating to follow his strong hands carrying out the necessary manipulations with an accuracy and delicacy one would not look for in so powerful a man.

While in Canada he was constantly compelled to depend upon his ingenuity to provide methods in emergencies and to improvise original means for the purpose of obtaining surgical results because consultants and assistants were frequently not available.

Later on during his foreign studies this experience enabled him to grasp the especial methods of the great surgeons, whose work he followed, and to modify and combine these methods. His powers of observation were most acute, and the deductions he made were logical. These qualities together with the enormous experience he had accumulated under such strenuous conditions of surgical activity produced a rare quality of surgical judgment equaled by few men in our profession whom I have had the privilege to know intimately.

It was not surprising then that a man with such qualifications should at once have taken his proper position among the leaders in his special field in this great surgical center. With the exception of Senn, Fenger, Gunn and Brainard, all of the great surgeons of Chicago have developed in the hospitals of this city, but like these four great leaders Ferguson came to us with recognized position, and it was for him to stand with the best or fall among the lesser lights.

Within a few years, he had fully established his position not only by developing a magnificent practice but by producing valuable original work as an author and attaining fame as a teacher. I need but mention the following essays and addresses, of which I have been able to collect forty-one, besides the large book on "The Technic of Modern Operations for Hernia," which is beyond question the best work on this subject in the English language. This work has received recognition in every country of the civilized world and each of his many other scientific productions has been extensively quoted by many important authorities.

He also wrote one of the best chapters in the American Practice of Surgery, edited by Bryant and Buck, vol. 8 pp. 279 to 390.

Every one of Ferguson's essays contains the distinct marks of his genius, his independence of thought, his thoroughness of investigation, his honest personal study and the brusque and fearless expression of his position.

SURGERY—

1890. Oct. On Surgical Hints and Cases. *Northern Lancet and Pharmacist*.

1903. Aug. The Surgery of Today. *Amer. Med.*

1904. June. Oration on Surgery. *St. Paul Med. Jour.*

GALL BLADDER SURGERY—

1895. Jan. Operative Treatment of the Diseases of the Gall-Bladder. *Jour. A. M. A.*

1897. Aug. Remarks on Choledocholithotomy, with a Report of Five Cases. *Medicine*.

1898. May. Surgical Cases. Gall-Bladder and Bile Ducts. *Chi. Med. Rec.*

HERNIA—

1895. May. On the Radical Cure of Inguinal and Femoral Hernia by Operation. *Ann. of Surg.*

1899. Dec. Adipose Tissue an Etiological Factor in Hernia. *ILL. MED. JOUR.*

1907. The Technic of Modern Operations for Hernia. Cleveland Press, Chicago, 1 vol. 365 pp.

1909. Jan. Cruroscecal Hernia. *Ann. of Surg.*

1911. A Typical Operation for the Radical Cure of Oblique Inguinal Hernia and Atypical Ones.

THORAX AND PLEURA—

1897. Jan. Thoracoplasty in America and Visceral Pleurectomy, with Report of a Case. *Jour. A. M. A.*

1909. Visceral Pleurectomy. *Trans. Amer. Surg. Assoc.*

1911. Parasites and Tumors of the Lungs and Pleura. *Trans. Internat. Surg. Soc.*

CLEFT PALATE AND HARE LIP—

1909. May. Cleft Palate. *Jour. A. M. A.*

1902. Oct. Contribution to the Surgery of Cleft Palate. *Ann. of Surg.*

1908. May. Hare Lip and Cleft Palate. *Jour. A. M. A.*

NEPHROTOMY—

1903. July. Surgical Treatment of Nephritis. *Jour. A. M. A.*

1904. A Case of Nephritis Treated by Decapsulation and Nephrotomy. *Trans. A. S. A.*

1908. Aug. A New Technic for Nephropexy. *Jour. A. M. A.*

PROSTATE—

1906. Oct. Indications for Prostatectomy and the Results of the Operation. *Jour. A. M. A.*

1910. May. Perineal Prostatectomy. *ILL. MED. JOUR.*

1911. March and April. Tumors, Cysts and Hypertrophies of the Prostate. *Am. Med. Compon.*

MISCELLANEOUS—

1893. Feb. Hydatids of the Liver. *N. W. Lancet*, St. Paul.

1894. Feb. Vesico- and Recto-Vaginal Fistulæ. *Brit. Med. Jour.*

1896. June. Varices of the Leg. *Chicago Med. Recorder*.

1898. Mar. Uretero-Vaginal and Uretero-Abdominal Fistulæ. Copyright by J. D. Emmett, M.D.

1898. June. Surgical Cases. Skin Graftings. Carcinoma of Rectum. *Chicago Med. Recorder*.

1899. Nov. Preliminary Report of Anterior Transplantation of the Round Ligaments for Displacements of the Uterus. *Jour. A. M. A.*

1900. June. Intestinal Anastomosis; Clamp and Enterotome; A Modification of Grant's Enterotome; An Aid in Suturing. *Jour. A. M. A.*
1900. Surgical Treatment of Appendicitis. *Proceedings of the Mich. State Med. Soc.*
1901. Apr. Removal of the Superior Maxilla Through the Mouth. *West Med. Rev., Lincoln, Neb.*
1903. May. A Case of End to End Anastomosis of the Popliteal Artery for Gunshot Injury. *Ann. of Surg.*
1903. July. President's Address. *Med. Fortnightly.*
1905. Nov. Methods of Exploring the Abdomen and a New One. *N. Y. Med. Jour. and Pa. Med. Jour.*
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1911. Mar. Complete Absence of the Vagina. An Operation for the Formation of a Plastic Vagina. *The Southern Med. Jour.*
1911. Apr. The Evolutionary Spirit for Betterment in Medical Education. *Jour. A. M. A.*

In order to give a clear picture of Ferguson's mental attitude in his scientific work, it will be interesting to give especial consideration to one of his works and for this purpose I will choose one of his essays on hernia. "A Typical Operation for the Radical Cure of Oblique Inguinal Hernia and Atypical Ones," not because this is more striking than his other works but because everyone recognizes him as one of the greatest authorities on this subject.

He introduces his subject with the following paragraph, which in itself characterizes his mental attitude:

"A typical operation for the radical cure of oblique inguinal hernia is one that places all the structures involved in the same relationship to one another as they are present in a normal person. The operations that have been hitherto produced to cure inguinal hernia fall far short of being typical. A careful analysis of failures, a painstaking research for hidden truths and a discernment of contestable premises are ever before the surgeon who hopes for more success, new discoveries and lasting procedures."

He then analyses the subject of inguinal hernia at first from the anatomical standpoint with the help of fifty dissections made by a trained assistant. Then he co-ordinates the anatomic findings with the clinical experience and then constructs an operation upon the foundation laid down by these observations and produces conditions which are ideal both from the scientific and from the practical standpoint. He further confirms his views by careful studies of the conditions found in the embryo.

He had previously studied all of the methods which had been introduced by other surgeons for the cure of inguinal hernia and had practiced all methods which seemed reasonably sure to promise a fair percentage of permanent cures. Then he studied the cases in which recurrence resulted and tried to determine the reason for this. To my mind Ferguson was the first author who fully appreciated and clearly pointed out all of these reasons and who produced an operation which was entirely scientific and

logical and which fulfills the conditions demanded in the introduction to his essay on "A Typical Operation for the Radical Cure of Oblique Inguinal Hernia." Having given definite logical reasons for the occurrence of hernia and the causes of recurrence, he is equally clear in describing his method for obtaining a permanent cure. None of the modifications which have since been suggested effect in the least the principles laid down in this original essay which characterizes its author as a great scientific surgeon.

It is not necessary to analyze the other works of Ferguson, although each one deserves the careful study of every surgeon. Had he lived to combine all his writings in one great work it would have been a worthy monument to a master. Fortunately, he has given us in a complete and finished form his splendid book of 366 pages on "Modern Operations for Hernia" which marks an epoch in the development of this subject and which will always be an honor to the surgery of this city.

In his early days of surgical work he was forced by the conditions existing in his field of activity to place his own judgment above that of most of his coworkers, and as a result of this he sometimes was inclined to claim credit for originality in matters which should properly have been credited to excellence of judgment in the application of long established principles, but he always did this with such frankness and honesty that it only made those of us who knew him well more firm in our admiration for his splendid personality.

It is not necessary to mention in detail the numerous improvements he made in many surgical instruments. We all use these in our daily practice and are constantly reminded of his ingenuity and of his intensely practical mind because each one of these instruments performs the definite function it was intended for.

Of the modifications of existing operations and the planning of new operations, the one for inguinal hernia with its entirely new and original features must always be looked upon as his greatest work, but although this is more universally known and more generally practiced it is no more striking than the pioneer work he did in the surgical treatment of hydatids, which was really his first great work.

He made valuable additions to the surgery of the kidney, to gall bladder surgery, to various gynecologic operations, notably the operation for the anterior transplantation of the round ligaments. His suggestions in stomach surgery and gall bladder surgery came early in the development of these subjects and his views have stood the test of time.

His work in prostatic surgery will always be followed by those who were fortunate enough to have an opportunity of observing his demonstrations. The same is true of his plastic surgery, notably of the technic he introduced into operations upon the cleft palate.

In short there was scarcely a single field in general or gynecologic surgery on which he failed to leave the marks of his genius and his ingenuity.

There was nothing to remind you of pretense or imitation in this rough jewel although one often felt that there could have been added a

certain polish, which we of western origin, education and primitive environment during the early part of our professional activity can scarcely hope to acquire. Capacity, industry, physical and mental endurance, perseverance and self-denial enabled this man to acquire learning and skill of the highest type under conditions which would have defeated any man of ordinary capacity. Here again we have an example of the wonderful results attainable through untiring effort and honest endeavor in the face of the greatest difficulties, for no man ever found more difficult conditions than this man faced as a youth in his efforts to build up a reputation and a great practice in Winnipeg, and many of us know how strenuous was the competition in this city during the years immediately following the World's Fair, and how many aspiring surgeons fell by the wayside while Ferguson steadily made his way to the front. It was because of his unusual ability, his great courage, his phenomenal energy and industry, and his honesty of purpose that he accomplished the life work of a great surgeon.

Had he possessed the same wisdom in protecting his own health that he employed habitually in the care of his patients, we would not now be here to mourn his loss. With his physique he should have added at least three full decades to his useful life.

SOME OF THE PERSONAL CHARACTERISTICS OF DR. ALEXANDER HUGH FERGUSON*

EDWARD F. WELLS, M.D.

CHICAGO

As if it were yesterday I remember my first meeting with Ferguson. He had recently come to the city from out of that far northern region which the geographers called Manitoba. It is true that Winnipeg was looming up, like a young giant of the wind-swept plain, eager to do battle for metropolitan honors; and the fame of Ferguson had preceded him. To reveal our mutual identities required but a few words; so few, indeed, that almost at once I found myself an interested listener to an illuminating exposition of the zoological and clinical history of the hydatid disease, interwoven with an artless narrative of his scientific investigations and surgical work in connection with this malady. It will be recalled that in the eighties of the last century there continued to prevail, where the fur-bearing animals found their haunts along the shores of lake Winnipeg, and the head of Hudson's bay; upon the banks of the Saskatchewan, and about the numberless marshes, lakes and streams of the levels of the great North-West, conditions which were unique upon this hemisphere. Here, during the long and near-arctic winters, the trapper and his dog were intimate companions, sharing alike the exhausting hunt, the scanty food and the meager comforts of the shack. With the lengthening days of spring, and the northern flight of birds, these vandals of

* Read at the Ferguson Memorial Meeting of the Chicago Medical Society, Feb. 7, 1912.

Nature, and vanguards of civilization, numerous found their southward way to the fur-traders' depots at the capital. Some, in addition to their furs, bore a larval burden of echinococcus, and supplied material for the clinic which Ferguson described.

During the years which followed I saw much of Dr. Ferguson, but I search my memory in vain for an instance in which our conversation was, barring incidental digressions, upon other than professional subjects; and this was probably the experience of others of his associates within the medical profession. He was an interested listener when topics of pure medicine were under discussion; he was an enthusiastic spokesman upon the advances of surgery, especially in matters of technic. He was very adroit in shunting a professional conversation from medical to surgical lines. He largely eschewed medical practice, yet he had no hesitation in invading its chosen fields with various surgical procedures.

The long and distressing last illness of Dr. Ferguson was a pathetic tragedy. With the dragging days, and weeks, and months the various phases of his malady made their advent with the silence of the tread of time, and the regularity of advancing fate. These he observed with clearness, and discussed their import and management with his advisers. He hopefully embraced the possibilities of relief; he bravely faced the approaching dangers; he courageously assisted in the conflict which was waged in his behalf; he calmly viewed the certainty of defeat; he accepted the result—as we knew Ferguson would.

Thus I knew this distinguished ornament of our profession only as a medical man. But there were other sides to his character; some of these were rarely revealed, even to his most intimate associates; none lend themselves readily to adequate presentation at my hands.

Dr. Alexander Hugh Ferguson, eminent surgeon of international reputation, was born February 27, 1853, near the obscure village of Manilla, in the county of Victoria, province of Ontario, Canada. He was the seventh of nine children born to Alexander and Annie (McFadyen) Ferguson, both natives of Argyllshire, Scotland. Of these parents I have been able to obtain very little information, except, and of course, they were good examples of the best and sturdiest Scotch stock; they possessed the strong constitutions, clear mental vision and ambition usually found in the Scotch immigrant; in their simple way they trod the local roads of material and intellectual advancement; they knew the difference between the right and the wrong, and were God-fearing people. An excellent heredity for one destined to tower in his chosen walk of life.

At the time of Ferguson's birth and during his boyhood, the country round about the little settlement of Manilla was in that state of farming development common to all newly-settled wooded localities of the Northern States and Canadian Provinces. Spreading and stretching toward the South-West from the old Ferguson homestead was an immense swamp, locally known as "The Marsh," comprising an area of many thousands of acres. Through, and out of The Marsh meandered a river—probably as crooked a stream as ever flowed—made famous by another distinguished native of this region; I refer to the clever metrical character sketches by

Dr. C. N. Johnson, of this city, in his book entitled "The Hermit of the Nonquon." The general lay of the land was rolling and diversified. The climate was rigorous in the winter, and warm in the summer. The temperature ranging from 30 to 40 degrees below zero in mid-winter, to 100 degrees in the shade in the long days of the summer. The settlers were almost exclusively immigrants from Scotland, England and Ireland, or their immediate descendants. There were Allen MacLean, a giant in stature, in strength, and in character—a stalwart Baptist, who never lost an opportunity for doctrinal disputation; the brothers Niel and Hector McFadyen, relatives of the Doctor, urbane young men, who led the neighborhood dances; the Johnny MacLean family, in which Dr. Ferguson began his obstetrical career; the McFarlanes, the McLaughlins, the Mac Phedrans, the McTaggarts, the Beatties, the St. Johns, the Glendennings, the Ennis', the McCullys, the Dobles, and a long list of others whose names indicate their nativity; all rugged, sturdy farmer folk from the "Mother Country"; all honest, industrious, frugal, law-abiding and for the most part religious; all entertaining a high regard for all that constitutes good citizenship.

Thus young Ferguson passed his boyhood in a climatic, economical and social environment which was well adapted to lay a substantial foundation, in physical and mental development, for stability of character, capacity for work, clearness of discernment and an expanding ambition. These are all required of the exceptional man; of one who can rise above early environments; of any professional man whose career attracts the attention of his fellows from far and from near, and of the layman, as well, as was done by Dr. Ferguson.

The progress of Ferguson through the local schools, such as they were in those days, and academy; his career as a country pedagogue; his work as student and instructor in college; his undergraduate, and post-graduate medical training, as notable as were the series of events in revealing the character of the man, must be passed with the mere enumeration. His professional progress to the highest levels of eminence you have heard from other, and abler eulogists.

Dr. Ferguson went to Winnipeg to practice his profession, primarily because his mother then resided there. He there discovered, and tried out his capabilities and prowess. At the end of a twelve-year period, and upon his removal from the field of his early triumphs, the whole medical profession of the Province evidenced their appreciation of his worth by the presentation of engrossed addresses, banquets and other tokens, and the public press, voicing the feelings of the people, spoke of his departure as a "public calamity."

His brilliant career in Chicago is familiar to you all, and has been recorded by numerous lay and professional historians. That he secured and retained the professional confidence and respect of the medical profession of this and other countries is abundantly evidenced by the very large number of medical men who referred their surgical cases to him. That the gratitude of his patients followed him was clear to any one who came in contact with them. That the profession of this city placed a high

value upon his abilities and character has been abundantly shown by the many honorable positions in which he was placed, and by this memorial meeting of this representative society, whose leadership he so recently laid down.

Dr. Ferguson was married, in 1882, to Miss Sarah Jane Thomas, daughter of Edward Thomas, Esq., of Nassagaweya, Halton county, Province of Ontario, Canada. To them were born two sons, Ivan H., and Alexander D., aged, respectively, 27 and 26 years. Both are preparing themselves to follow in the footsteps of their illustrious father. The bereaved widow and sons survive. To those who knew Dr. Ferguson it is superfluous to say that he was a considerate and devoted husband and father.

Dr. Ferguson was an honored member of all the local, and of many of the state and national medical societies of this and of other countries. Extra-professionally he was a thirty-second degree mason; honorary member of various Greek fraternities; of the Press, University, South Shore Country, and of other clubs; member of the Illinois St. Andrews Society, of the Western Economic Society and of the National Economic League; Member of the First Presbyterian Church of Chicago. He was also, by special bestowal of the King of Portugal, Commander of the Order of Christ of Portugal.

Dr. Ferguson's time and energies were so fully employed in his professional work that he had but little time for the ordinary diversions of life. As a young man in college he played football and baseball. In boyhood he may have used the rod in the fishing holes of the Nonquon, but in later years fishing was too tame for him. He had musical tastes, and he even sang in church in Toronto during his medical student days. He was especially fond of Scotch songs, the classical ones appealing particularly to his tastes and hereditary pride. He was both a critic and connoisseur in painting, and often regretted that lack of time for training prevented him from placing upon canvas some of his artistic conceptions.

He had a large and well selected professional library, to which he was constantly making judicious additions; and the books which he possessed he knew how to use to the best advantage for his work; his perspective of medical and surgical literature was remarkably true in line and lighting.

He was an indefatigable reader of standard literature of the better class, but for the light and ephemeral books of the day he had neither taste nor patience. His own writings, especially those prepared for public and semi-public occasions, those in which the medical flood-waters flowed over into the fields of general interest, are full of passages which show that with equal opportunity, stimulus and training, Ferguson could have wielded the pen with a precision, ability and facility equal to his masterly use of the scalpel; that his flights of fancy into the realms of pure literature might well have rivaled his achievements in surgical science and art.

Dr. Ferguson was gifted with a pleasing, even a captivating personality. Children, whom he loved, instinctively gave him their confidence; the aged, whom he respected, found in him their ideal; the active workers of all classes, those with their faces yet turned toward the morning sun,

those braving the heat of noonday, and those beginning to slide down the afternoon of life, legions of them, and every one of them met upon even terms, accepted him as friend and helper. Nowhere did this man exhibit the graces of his human character with greater satisfaction, elegance and brilliancy than in entertaining a group of friends, lay or professional, at his hospitable board. His genial spirit made these meetings of frequent occurrence, and each bidden guest carried away pleasant memories of such events.

His kindly nature found expression, frequently and abundantly, in a charity of thought, of expression, and of material deed, which was direct, personal, helpful, and opportune, for which numerous partakers should be, and are, profoundly thankful.

Dr. Ferguson has modestly analyzed the elements of professional success, as exemplified in his own case. To those which he mentions I should add: That inherent capacity, which is in-bred, fortified by early favorable and adverse surroundings, stimulated by discovery, cultivated by embraced opportunity, and seasoned by experience; such strength of convictions that, although they might be tentatively withdrawn in the face of useless controversy, they could not be shaken, nor destroyed; a ready adaptability in meeting people upon a common plane of simple sincerity, and of open and absolute honesty: a well-balanced duplex mentality, which enabled him to survey and estimate with coolness every element of a critical situation, the while he was with intense activity devising measures for attack or defense; a courage which knew no fear, and never faltered; a profound confidence in his sum of knowledge, and ability to give it effective direction in useful channels. These, and other attributes made his success as a surgeon—it would have been the same in any other field of useful human endeavor—eminent.

Thus splendor of achievement is not a chance mirage of the desert; neither is the volume of echoes from near and from far, which is called renown, an imaginary major triad. Here only prevails that natural law, which reads large, and to the meaning, that cause and effect—including the correlation of every element of force and resistance, upon either side—must be equal, and reciprocal. Extraordinary success may only be achieved by the exceptional man, and such a man was ALEXANDER HUGH FERGUSON.

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ACUTE POLIOMYELITIS: CLINICAL ASPECTS WITH ESPECIAL REFERENCE TO THE RARER LESIONS *

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In speaking of the clinical aspects of acute poliomyelitis, I will, so far as possible, omit reference to the spinal form, except as it may be

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necessary to refer to it in speaking of the general diagnosis, or its occurrence as a late involvement in the cases which I am presenting this evening, confining myself as much as possible to some of the rare and more exceptional types of this disease, accepting the term poliomyelitis in its broader sense of poliomyeloencephalitis. To my mind it covers not only the typical cases of spinal involvement, but also isolated cases with meningitis, encephalitis, bulbar lesions and polyneuritic types. Many of these cases, more especially the ascending and descending forms, having formerly been classed as distinct clinical entities and only in the light of our more recent bacteriologic and pathologic studies, have they come under this broader view of the disease.

In fact, Wickman has gone so far as to submit a definite classification based principally on clinical types of the disease, which include, beside the ordinary spinal form, the following types: the ascending and descending progressive paralysis simulating Landry's paralysis; the bulbar or pontine type, the encephalitic type, and the meningeal type. He further recognizes an abortive form and a polyneuritic form of the disease, the latter simulating in its early form peripheral neuritis.

In so grouping the cases, one will soon realize that it can only be done relatively with reference to the most prominent symptoms, or better, regions most deeply affected, and by so doing the whole picture is more clearly presented in consideration of the broader view of this entire subject, as accepted to-day.

I shall briefly attempt to describe these less common forms of the disease and illustrate them as far as possible by the cases which I have to show.

The Cerebral Forms of Poliomyelitis in Its Broadest Sense.—The cases to which I first desire to call attention are those in which the structures of the brain, medulla and pons, or either, are affected, leaving the cord in some cases for the most part unaffected. These cases have been previously described by various writers as encephalitis or polioencephalitis superior or inferior of Wernicke or of poliomyeloencephalitis of Strümpel. We may group all these descriptive clinical pictures under the entity of polioencephalitis. The general picture of polioencephalitis is cerebral, the symptoms are cerebral symptoms with, in certain cases, added palsies.

As an example of the polioencephalitis inferior form of the disease, I wish to show a case with the following history:

Miss D. B., aged 12 years, was seen on the sixth day of the illness, Nov. 8, 1910, and observed daily thereafter for many weeks at the Michael Reese Hospital, Chicago. A rather mild insidious onset for the first few days, characterized by some fever, malaise and restlessness, and on the fourth day by almost incessant vomiting. A servant in the same household and a younger sister fell ill at the same time, and in a similar manner, but their symptoms rapidly disappeared by the fourth day, whereas this patient grew worse. Up to this time the acute gastrointestinal invasion affecting three individuals simultaneously suggested something of an innocent ptomain-like disturbance. Our patient now developed a temperature of 101 to 102 F., became very restless, sleepless, excitable. On the eighth day she for the first time showed difficulty in swallowing, and the voice sounds were husky and of a nasal quality. The head lay in a limp

position to one side, and when turned or raised voluntarily, brought on a fit of coughing or choking. Attempts to take food or water resulted in paroxysms of strangulation most distressing to witness. The face was flushed, the eyes bright, the pupils well dilated, reacting normally to light and accommodation, and the fundi were negative. Respirations were notably rapid and shallow. Examination revealed a slight drooping of the right corner of the mouth, complete paralysis of the soft palate on the right side and a relaxed uvula. Other cranial nerves were apparently intact. The clinical picture remained unchanged for a day or two. The extremities were freely moved. Bowels and bladder were continent. Within a day or two pain appeared at the nape of the neck, in the small of the back and in the legs. The head could not be lifted, the arms and legs remained free. After another twenty-four hours the picture changed, in that the legs were involved in a rapidly descending paralysis, affecting all parts symmetrically except the toes, which never quite lost all their ability to move. The back muscles as well as intercostals were impaired. The abdominal recti were spared. The arms from beginning to end were unaffected. Sphincter control was for a time lost, then regained. The fascial and glossopharyngeal paralysis so prominent at first began to improve some late in the second week. Nasal-tube feeding was discontinued after the eleventh day, but solid food was taken with great caution for many weeks later, and it required several months before normal swallowing took place.

As the bulbar symptoms receded, the spinal, showing only in the legs, deepened. The tendon reflexes in the arms were present; the abdominal skin reflexes were faintly so. The knee-jerks and Achilles were absent (and have remained so); the plantars were present. The spinal syndrome was for many weeks characterized by intense agonizing pains in the lumbosacral region, radiating into the legs; indeed, so severe as to require constant changing of body position, hot flannels and morphin. Objective sensory disturbances there were none.

The temperature for the most part was of low grade, ranging from 98 to 100 F., never exceeding 101.2 F. Respirations, irrespective of the temperature curve, varied mostly from 36 to 48, never falling below 28. The reaction to degeneration taken on the twelfth day was complete for some museles, incomplete for others. The urine showed some casts and desquamative renal elements. The blood showed 4,200,000 reds; whites, 16,600, and hemoglobin of 90. Spinal puncture made on the sixth day after the onset of paralysis revealed a perfectly clear fluid, six to ten lymphocytes to a field, no other cellular elements. Cultures from the spinal fluid were negative. Tubercle bacilli not found. Noguchi negative. Eleven months after date of onset the residuum of paralysis is confined entirely to the limbs, which have undergone considerable selective atrophy; the voice contains the least degree of nasal quality, the functional ability of the legs is restricted to only momentary support when unaided in standing. Occasionally there is some difficulty in swallowing, associated with paroxysms of choking.

The cases which are limited in their extent to involvement of the ocular and facial nuclei, and which are accompanied by cerebral symptoms, are those which to me have been of greatest interest, because in such cases of polioencephalitis we have had the greatest difficulty, in the face of the cerebral symptoms, accompanied as they were after a while, with nuclear palsies, to differentiate them from forms of meningitis either of the acute suppurative (meningococcic) variety, the tuberculous forms of the disease, or those following in the course of gastro-intestinal infections. In fact, in some cases the clinical similarity of forms of polioencephalitis with forms of true meningitis, or, on the other hand, toxic neuritis, is so close, that it is only by careful observation that we can differentiate them.

Isolated bulbar and pontine forms, however, do occur, and in this connection I beg leave to roughly sketch the clinical findings in two other cases. Unfortunately the first patient, Rosie G., is now in the Cook County Hospital ill with scarlet fever.

Patient.—Rosie G., aged 3 years, was taken ill four days before admission to the hospital, with three vomiting spells occurring during the night, some frontal headache, rather persistent, and the following morning slight temperature, with irritability and later apathy. The family history is good, although one sister is known to have tubercular hip disease. One day, prior to admission, the parents noticed an internal squint of the left eye. On admission, the temperature was 101.6 F., pulse 120, respirations 32. This curve dropped to normal after the first day and has remained so. Physical examination revealed on the part of the cranial nerves a distinct left external rectus palsy; pupils and fundi were negative; well-defined left facial palsy of peripheral type; deviation of the tongue to the left (not apparent but real). On the first day there was definite rigidity of the neck muscles, so that attempts to lift the head caused the shoulders to rise. Palpation of the neck muscles were painful. Anticipating some ear involvement because of a slight complaint of earache, paracentesis was done, with negative result. The mastoid was not tender. After the first day the sense of rigidity of the neck muscles disappeared, and judging from the position of the head and the readiness with which it fell backward, the posterior neck muscles showed definite weakness. The child's gait was closely observed. There was no gross paralysis in any one muscle or group of muscles, but conspicuous were the queer, infirm, uncertain ataxic steps of the child. All of the deep and superficial reflexes of the trunk and extremities were normal, except that repeated efforts failed to elicit the knee-jerks. The Babinski sign was present. The urine was normal.

The blood count showed only a slight increase in the white cells, 14,400. The Pirquet was negative; the spinal fluid was taken on the sixth day after paralysis. was not under tension, was perfectly clear and sterile. The Ross-Jones and Noguchi tests were negative; very few lymphocytes were noted.

Conceding the possibility of a basilar or pontine lesion of different pathology, I feel very certain of the poliomyelitic nature of the infection in this case, on the strength of the pontine symptoms, involvement of the sixth, seventh and twelfth nerves, the paretic neck muscles, the ataxic gait, together with the lost knee-jerks.

This diagnosis is also seemingly confirmed by the next case, Blanch F., occurring four doors away, and who was taken sick only a few days later, and presenting lesions almost identical with those of Rosie G., which were also mainly limited to the lower extremities. Her mother stated that she became acutely ill with nausea and vomiting, had a high fever, a slight sore throat, all of which improved, when the next day it was noted that the child could not raise her head from the pillow. Next there was noted a left-sided facial paralysis, ptosis and internal strabismus on the same side. The facial findings and strabismus are much improved in both cases at this time, three and one-half months later, but the weakness in the cervical muscles and ptosis are still present; the legs have entirely recovered.

These cases are unique in that, in both cases, paralysis was preceded by gastro-intestinal symptoms, slow onset of paralysis, with a very limited involvement outside of the cranial nerves, and in both cases an absence of involvement of vital centers in the bulbar region.

The Progressive Type.—In a certain number of instances, the paralysis is of the progressive type. It usually begins in the lower extremities and gradually extends upward, resembling in its course that of the so-called

"Landry's paralysis." It is probable, in fact, that a very considerable proportion, if not all of the cases which have in the past been described as Landry's paralysis, were really cases of infantile paralysis.

Case 1, of my series, could be cited as one of the type of descending paralysis, beginning in the medulla and finally involving the lumbar cord.

The Polyneuritic Type.—The history of the onset and rapid or retarded development of paresis and paralysis differs but little from the ordinary types. Pain is a prominent symptom in many instances. The pain is sometimes in the joints, but more often along nerve-trunks, or is indefinite in its distribution. It is usually most marked in the paralyzed parts. There is occasionally tenderness over the nerve-trunks. Pain and tenderness are at times marked enough to cause the paralysis to be overlooked and a diagnosis of rheumatism or scurvy to be made. The muscles of the extremities are often held in a state of spastic paralysis. This combination of rigidity and resistance is possible, of course, only when the muscles are but partially paralyzed or when some of them are intact. The failure to appreciate the significance of this condition of combined flaccidity and spasticity has led to many errors in diagnosis during the acute stage. A striking instance of the difficulties encountered in distinguishing this form from the ordinary cases of toxic neuritis, is illustrated by Case 4, Rosie B., aged 8 years, whom I am presenting this evening.

Two weeks before entering the hospital following a slight indisposition associated with some temperature, the child complained of a feeling of numbness in her feet and legs. Later she complained of pain in her shoulders, elbows and spine, associated with marked irritability and insomnia.

Examination showed pupils widely dilated, equal, regular in outline, reacting promptly to light and accommodation. No ocular plegias or nystagmus. Cranial nerves 2, 3, 4, 6, 7 and 8 intact. Reflexes: abdominal and patellæ absent. Triceps and wrist taps not elicited. Achilles and plantar absent. No Babinski. Pharyngeal reflex present.

The motor system showed the following: Dysphagia present with some regurgitation of fluids through nose. Voice sounds not particularly nasal. Symmetrical involvement of legs, both in extension and flexion. She could raise the thighs slightly. There was less involvement of the feet. Rectus muscles were paretic. In attempts at sitting up when head and neck were raised, the former dropped backward of its own weight. Strength in hands and arms only slightly affected.

Sensation not impaired. Sphincters controlled. Urinalysis showed slight trace of albumin. Throat cultures were negative. Von Pirquet negative. Blood count: hemoglobin, 85 per cent.; red blood corpuscles, 3,783,000; white blood corpuscles, 31,200; differential polymorphonuclears, 50 per cent.; small mononuclears, 43 per cent.; large mononuclears, 5 per cent.; eosinophils, 2 per cent.

Diagnosis rested between a postdiphtheritic paralysis and polyneuritic form of poliomyelitis, and still remains open. The course is best shown by the child's general condition as presented to-night, which is one of apparently perfect health, exactly seven months from the date of onset.

The Abortive Type.—There is no doubt that the disease occurs very frequently without the development of any paralysis. The term "abortive" ought strictly, of course, to be limited to the cases in which there is no paralysis. There is, however, another class of cases in which the paralysis is very slight, and lasts but a few hours or days, which is on the border-

line between the abortive type and the ordinary spinal type. These cases are very easily overlooked clinically, unless the symptoms are very carefully studied, or when they are seen in families where true cases develop. Such cases, I firmly believe, existed in the family of Case 1, namely, a younger sister and the servant girl, who became sick at the same time and in a similar manner, but in whom the infections were, in all probability, annihilated in the gastro-intestinal tract.

Diagnosis.—The diagnosis of infantile paralysis of the spinal type after the development of the paralysis is, of course, very easy. The great difficulty at present is in making the diagnosis before the appearance of the paralysis. Sweating, marked nervous irritability and hyperesthesia are present in many instances before the onset of the paralysis, but they are not at all constant. If they are present, they are strong evidence in favor of infantile paralysis, but their absence does not count against it. Hyperesthesia is the most constant and most important symptom of the three.

Although leukopenia occurs in animals during the early part of the acute stage of infantile paralysis, it is certainly not a constant symptom in man, and in many instances is replaced by a hyperleukocytosis. Further experience is necessary to determine of how much value the leukocyte count is in the early diagnosis of infantile paralysis. At present it is of little or no assistance. While it is possible that there is a lymphocytosis in the early stages of infantile paralysis, there is at present not sufficient evidence to show whether either a relative or an absolute lymphocytosis is at all a constant phenomenon. If further investigation shows that it is, it should be of considerable assistance in the early diagnosis.

TABLE 1.—BLOOD FINDINGS IN OUR CASES

Case.	Name.	Age.	Type.	Day of Paralysis	Hb.	R.B.C.	W.B.C.	P.N.	S.M.	L.M.	E.	Basoph.
1.	B.D.	12 yrs.	Pont. & Spinal	6.	90	4,200,000	16,600	85	10	5	0	0
2.	R.G.	4 yrs.	Pontine	2 day	70	4,148,000	14,400	42	44	11	1	2
				6 day	70	5,292,000	8,400	46	42	11	1	0
3.	E.K.	11 mo.	Spinal	4 day	70	4,932,000	10,400	41	43	16	0	0
4.	S.J.	4 yrs.	Spinal	10 day	85	5,112,000	12,000	49	42	8	1	0
5.	S.G.	2 yrs.	Spinal	6 day	85	5,216,000	16,400	37	58	5	0	0
6.	M.D.	8 mo.	Spinal	7 day	..	.....	11,800	53	40	5	2	0
7.	J.W.	20 mo.	Spinal	9 day	70	3,888,000	11,600	54	38	8	0	0
				10 day	76	.....	16,800	34	58	8	0	0
8.		15 mo.	Spinal	19 day	86	4,558,000	26,000	61	27	11	1	0

Cerebrospinal Fluid.—Experimentally, there is an increase in the number of cells in the cerebrospinal fluid during the prodromal stage before the appearance of the paralysis. The polynuclear cells at this time exceed the mononuclear. After the appearance of the paralysis the mononuclear cells quickly outnumber the polynuclear. A fibrin clot is often formed in the prodromal or early part of the acute stage. Dr. Flexner's

case, Frissell, is the only one, I believe, so far on record in which lumbar puncture has been done in man during the preparalytic stage, obtained a slightly opalescent fluid which gave a marked protein reaction with Noguchi's test and showed an excess of polynuclear cells. The formula had begun to change to the lymphocytic, however, before the paralysis developed. Lumbar puncture ought, therefore, to provide a most valuable means of diagnosis in this disease during the preparalytic stage. Its value is considerably limited, however, by the fact that there is nothing whatever characteristic about the early symptoms of infantile paralysis, and therefore nothing to definitely suggest its use.

During the acute stage of paralysis the cerebrospinal fluid is clear, not infrequently under somewhat increased pressure, often forms a fibrin clot on standing, and may contain an excess of cells. These are chiefly of the mononuclear type, most of them being lymphocytes. These changes are, however, identical with those found in tuberculous meningitis, the disease with which it is most likely to be confounded. An increased protein content has not been found by the Noguchi test in our cases of poliomyelitis in the paralytic stage. A positive diagnosis between them, so far as the spinal puncture is concerned, can only be made by the examination of the cerebrospinal fluid for tubercle bacilli. These can be found in the great majority of the cases of tuberculous meningitis if the examination is careful enough. The characteristics of the cerebrospinal fluid in infantile paralysis are, of course, so different from those in meningococcal, influenzal and pneumococcal meningitis that no confusion with these conditions is possible.

FINDINGS IN SPINAL FLUID OF OUR CASES.

Case.	Name.	Age.	Type.	Day of Paralysis.	Appearance.	Cells to 1/6 field.	Noguchi Acid Test, Butyric	Ross-Jones.	Cultures.
1	D.B.	12 yrs.	1. Pont. & Spinal	6 day	Clear..	6-10 Lymphocytes..	Neg.	....	Neg.
2	R.G.	3 yrs.	2. Pontine	6 day	Clear..	Occas. Lymphocytes.	Neg.	Neg.	Neg.
3	E.K.	11 mo.	3. Spinal.	5 day	Clear..	No cells	Neg.	Pos.	Neg.
5	S.G.	2 yrs.	4. Spinal.	16 day	Clear..	No cells	Neg.	Neg.	Neg.
8	E.M.	15 mo.	5. Spinal.	21 day	Clear..	Few Lymphocytes ..	Pos.	....	Neg.

I desire to acknowledge my gratitude to Dr. Simon Flexner for the impetus given this entire subject by his experimental researches, and to Drs. Henry Koplik and J. L. Morse for quotations from their excellent papers on the cerebral and spinal forms of poliomyelitis. Also to my colleagues, Dr. D'Orsay Hecht, I. A. Abt and E. Lackner, who were associated with me in the study of my cases.

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SURGICAL ASPECTS OF POLIOMYELITIS *

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The objects desired in the operative treatment of paralysis following poliomyelitis are correction of form and restoration of function. The operative procedures designed to accomplish these are arthrodesis and tendon transplantation, neither of which should be undertaken until sufficient time has elapsed to insure return of function to temporarily paralyzed muscles, which should be maintained in such positions by mechanical apparatus or shortening of skin on the side involved, so as not to permit of overstretching. Failure to aid temporarily paralyzed muscles may prevent the return of function as the result of overstretching.

In arthrodesis an attempt is made to fix a joint, the muscles controlling the movements of which are partially or completely paralyzed, by the least sacrifice of bone. The object, in the lower extremity, for example, being to furnish a rigid column of support, so that weight may be borne on it without the aid of mechanical appliances.

Arthrodesis should not be performed on children under 8 years of age, preferably in children over 10. When performed in children under 8 the union between the bones is apt to be fibrous. Fibrous union defeats the purpose of the operation, if the surgeon desires a bony one, although the fibrous union is often rigid enough to permit of the return of tone and elasticity to muscles which have been overstretched as a result of malposition of the part.

The joints best suited for arthrodesis are the ankle, midtarsal and knee. Arthrodesis has been successfully performed on the shoulder joint in a few instances of deltoid and upper arm paralysis in which the muscles controlling the motions of the shoulder girdle have been intact. High position of the shoulder following overaction of the hypertrophied trapezius muscle and scoliosis are the disadvantages of this operation. The hip, wrist and elbow joints are not suited for arthrodesis although the last joint has occasionally been fixed successfully at an acute angle to permit of the patient putting the hand to the mouth. Some surgeons advise that arthrodesis of the knee joint be not done before the twentieth year, for the patient should be able to decide whether he prefers a stiff joint to mechanical supports, and besides there is the danger of flexion contracture in malposition if the operation is performed earlier.

In tendon transplantation the tendon or muscle which is transplanted should be attached to the periosteum or transferred by the silk strand method of Lange, in case that it is not long enough to be attached to the periosteum direct. This method is superior to suture of the transferred into the paralyzed tendon as introduced by Nicoladoni and practiced so extensively by Vulpinus.

Tendon transplantation should preferably be performed in children over 5 years of age, because they can then help in the after treatment.

* Read in Symposium on Infantile Paralysis at South Side Branch, Chicago Medical Society, Jan. 5, 1912.

In the after treatment care should be taken that the transplanted muscle should not be subjected to strain, before voluntary motions can be made. All strain should be kept off the transplanted muscle for some time, because the loss of the early promise of brilliant results after tendon transplantation is often due to overstretching of the transplanted muscle. The deformity should be overcorrected by wrench or tenotomy and appropriate dressing before tendon transplantation is attempted.

PATHOLOGY OF POLIOMYELITIS *

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CHICAGO

The great prevalence of infantile paralysis in the United States during the past few years and its rapid increase during the last two or three years are matters which demand our serious attention, and those present this evening are to be congratulated that they have had the opportunity of hearing the subject discussed by one who has done probably more than any other man in clearing up some of the doubtful points in its etiology and epidemiology. Strümpel in 1884 suggested that the disease was contagious, but many agents, such as trauma, heat, cold, etc., have been advanced as etiologic factors. It was not until 1909 that the work of Flexner and Lewis in this country, and Landsteiner and Popper in Europe appeared, setting at rest all doubts concerning its nature.

While the discovery of the nature of the disease has not yet given us a cure or a reliable method for preventing its development, it has put us in a position where we may confidently hope for both. The discoveries that the mucosa of the nasopharynx contains the virus and that animals can be successfully inoculated by rubbing the virus into the scarified mucosa of the same region are very important. These experiments have been recently confirmed by Levaditi, who found that the virus could usually be obtained from a cotton tampon left over night in the nasopharynx of a patient in the acute stage of the disease. The results of these experiments teach us first, that great care should be taken in sterilizing everything coming into contact with the patient's mouth; and second, that this is probably one portal of entry. The argument that the chief portal of entry is through the gastro-intestinal tract because of the presence of gastro-intestinal symptoms need not necessarily be true, as it has been shown that animals successfully inoculated by the intracerebral method sometimes develop diarrhea.

While great advances have been made in our knowledge of the etiology of the disease within the last two or three years, comparatively little has been made in our knowledge of the pathologic anatomy since the classic report of Wickman in 1905. He described very minutely the changes in the meninges, cord and brain. The changes found in the other organs appear to depend on the nature of the onset. When these are gastro-

* Read before the South Side Branch, Chicago Medical Society, Jan. 5, 1912, in a Symposium on Infantile Paralysis.

intestinal in character, there is usually found a hyperplasia of the lymphoid tissue throughout the intestinal tract and also of the mesenteric glands. When the onset is respiratory in character, bronchopneumonia is not uncommonly present. In addition, there is usually a parenchymatous degeneration of the liver, heart and kidneys. The specific lesions of the disease are to be found in the central nervous system and consist of hyperemia, edema, hemorrhages and degeneration of the ganglion cells. These changes are most marked in the anterior horns of the cord, but are also to be found in a slighter degree in the posterior horns, the medulla, and at times in the cerebrum. Microscopically, the perivascular spaces are dilated, filled with cells and a serous exudate. Edema is marked throughout. Small hemorrhages are not infrequently seen. Wickman states that possibly these hemorrhages are not due to the virus, as they are to be found in regions in which no other apparent change is present. Most observers, however, are inclined to believe them toxic in origin.

It is fortunate for the human race that the virus naturally does not attain the virulence Dr. Flexner describes in that used in his experiments with monkeys. When we consider that the dried virus will remain viable for a long time and that freezing has apparently little, if any, effect, we are confronted with a very serious problem, for unless destroyed by chemicals or heat, substances containing the virus may be capable, after long periods of time, of producing the disease in susceptible individuals. It was owing to these experiments on the resistance of the virus to drying that the investigations of Neustaedter and Thro were based. These authors recently conducted some experiments with the dust obtained from rooms in which patients with the disease had been confined. With the filtrate of watery extracts of this dust they were in one instance enabled to produce the disease in a monkey and with the virus obtained from this animal to successfully inoculate two others. This observation, if confirmed by more experiments, is exceedingly important, as the suggestion has already been advanced that the disease is conveyed by means of dust, particularly as it is present especially during the seasons when dust is most prevalent, and because of its greater frequency in rural districts and small towns where there is little, if any, paving. In addition, it has been asserted that in certain towns cases were more frequent on dusty streets and that the epidemics ceased when these streets were sprinkled.

It is to be regretted that up to the present the experimental work done has not given us a practical method for making an early diagnosis. For purpose both of treatment and prophylaxis this is exceedingly important. The fact that one attack confers an active immunity indicates the production of immune bodies, and this leads us to hope that not only may we expect the discovery of some method of actively immunizing persons against the disease, but also some satisfactory method for its treatment. Owing to their uncertainty, the methods which have been used for actively immunizing monkeys do not appear to be adapted for use on human beings. The results obtained from inoculation with neutral mixtures composed of virus and serum of a recovered person or animal are similar

to those obtained in the immunization of animals against hog cholera and rinderpest. In neither of these diseases has the causative organism been isolated and in order to produce an active immunity the so-called "simultaneous method" is used. According to this method a small dose of the virus is given on one side of the body and the immune serum on the other side. If following the injections the animal shows a reaction, it will be found to be actively immune. If no reaction occurs, it will be within a short time just as susceptible as a normal untreated animal. The methods of introducing the virus differ, but the same principle seems to apply. In one the virus is destroyed before introduction, and in the other a sufficient number of immune bodies are introduced to destroy the virus before the protective agencies of the body are called on to any extent. With neutral mixtures of toxin and antitoxin this method is successfully used, the results obtained being probably due to the dissociation of the mixture in the animal body, thus permitting the toxin to assume the properties of an antigen. With the neutral mixtures described by Dr. Flexner, the virus is probably present in such small amounts that when once neutralized it is not capable of stimulating the normal protective agencies of the body.

THE CLINICAL ASPECT AND TREATMENT OF ACUTE ANTERIOR POLIOMYELITIS *

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Since the publication of Wickmann's monograph on epidemic poliomyelitis recognizing eight clinical forms, the disease is not generally looked on as a mere anterior poliomyelitis because the pathologic process may at times involve all the gray matter of the cord, of the medulla oblongata and of the cortex. But it seems to me that the clinical picture familiar to the average physician represents the true type of the disease entity, and that it is the more typical form of the anterior poliomyelitis. Comparatively the atypical cases are rare and should create no confusion in the mind of the practitioner.

Though great headway has been made in the disease since Heine (the German orthopedic surgeon) first recognized the clinical features, we are still in ignorance of any pathognomonic symptom by which the diagnosis of either the epidemic or sporadic form of anterior poliomyelitis may be made with certainty before the stage of paralysis. However, in the presence of an epidemic, an acute onset of symptoms varying little from the accompanying disorders of digestive or eruptive diseases is very suggestive. In these suspected cases it is possible to arrive at a tentative

* Read in a Symposium on Infantile paralysis before the Chicago Medical Society, Jan. 17, 1912.

diagnosis by examination of the cerebrospinal fluid. This is found slightly turbid, best seen on slight shaking, due to a large increase of the polymorphonuclear and mononuclear cells. The protein content is also increased, as shown by Noguchi's butyric-acid test. Bacteria are absent. It is differentiated from a tuberculous meningitis by finding the tubercle bacillus in the spinal fluid. These are present in not more than about 10 per cent. of the cases, in routine examinations.

A study of the epidemics occurring in this country in the past four years has shown that anterior poliomyelitis begins with symptoms of a general infection commencing with malaise, fever, chills, nausea, sometimes vomiting, and diarrhea, with rapid appearance of paralysis. In a few instances, abortive cases are recorded; that is, where there is no paralysis. Anderson and Frost, by experimental work, were able to prove that in six out of nine cases the abortive form exists. In other instances the initial symptoms may be so mild that they escape observation. The child goes to bed apparently well and awakens in the morning with either one or both limbs in a state of flaccid paralysis. Sometimes a very severe form is manifested by the development of bulbar symptoms, the fatal cases showing great malignancy, death occurring in from twenty-four hours to four or five days. Pain and tenderness in the limbs and muscles of the back associated with the febrile disturbance may precede the paralysis and then a mistaken diagnosis of rheumatism may be made. While the fever may vary in severity and duration it is no index to the degree or extent of the subsequent paralysis.

The characteristic feature of anterior poliomyelitis is the flaccid muscular paralysis which develops early and rapidly reaches the maximum within a few hours. The tendon reflexes are almost always absent; particularly is this true of those reflexes associated with the normal function of the paralyzed parts. A few cases, however, have been reported in which there was a tendency to spasticity and exaggerated reflexes. The affected muscles waste materially within a few weeks after the onset of the malady, while the loss of electrical irritability becomes apparent in a few days. Sensation is not impaired. There is disturbance of circulation manifested by blueness and coldness of the member. In some cases there is retardation of growth of the affected limb corresponding to the degree of the paralysis with consequent loss of function.

The paralysis is at first complete, and may either be widely distributed or limited to an individual muscle or group of muscles. It may involve the upper and lower extremities of one side only; again, it may involve both the lower extremities; but most frequently does it affect only one lower extremity and that the right side. The diaphragm, the respiratory muscles, the bladder, and the rectum almost always escape. Recently I was told of a case in which there was paralysis of the diaphragm lasting several days. That the sphincter muscles are not involved is a distinguishing feature between anterior poliomyelitis and a general myelitis. The trunk muscles are more likely to be affected at the same time with the thigh and leg muscles, than they are separately. Sometimes the

paralysis extends to the neck, throat, face, and even to the eyes. All combinations of paralysis may exist.

This extensive paralysis, however, is not persistent; for, after a stationary period of a few weeks, recovery takes place except in some one muscle or group of muscles, whose electrical irritability has been destroyed. The improvement is marked in the first six months, less striking in the second six months, while little or no change is noticed in the following six months.

The degree of paralysis may be estimated by the electrical reaction, but it is impossible during the first few days or weeks of the attack to state how much recovery will take place in the paralytic muscles. It is not advisable to use electricity for diagnostic purposes at this time.

The sequelæ of anterior poliomyelitis are the characteristic contractions which lead to deformity and add to the disability already present. Such deformities are dependent on the constant pull of the non-paralyzed muscles, and the influence of gravity favoring an abnormal posture. If this abnormal posture is allowed to persist, the affected muscles are stretched, while the non-paralyzed muscles accommodating themselves to the new position become structurally shortened. If, however, all the muscles of a given part are equally paralyzed and atrophied, no contractions occur, but the parts will be relaxed and what is known as a flail joint results.

The most frequent deformities are those of the lower extremities, as *pes equinus* (toe drop), *equinus varus* (club-foot), or *pes valgus* (flat foot).

When the hip is deformed it is usually in the position of flexion combined with abduction and outward rotation of the thigh, which in time produces lordosis in the back. Subluxation at the joint may occur and is usually accompanied by flexion of the limb.

Deformity at the knee includes flexion, combined with subluxation of tibia backward, knock knee and outward rotation, due to partial or complete paralysis of the flexors and quadriceps extensors. Paralysis of the erector spinæ muscles results in inability to sit alone, while paralysis of the abdominal muscles causes a lordosis. When the muscles of the shoulders and upper arm are paralyzed, deformity seldom occurs; this also is true of the elbow joint, but it is useless if the arm muscles are paralyzed. Scoliosis, due to anterior poliomyelitis, is not an infrequent deformity. The convexity may or may not be to the side of the paralyzed muscles.

Treatment.—A large percentage of the cripples to-day carry the marks of anterior poliomyelitis through life. So far, in the light of our present therapeutic advancement, no specific remedy has been discovered that will shorten or cure this disease. But there is every hope that in the near future the virus regarded as causal will be discovered, and then perhaps a serum treatment will be established. Nevertheless there are few diseases for which so much can and should be done.

It is imperative that the patient be isolated and all details carried out as in other contagious disease. It is believed that the virus has an affinity for the tonsils and pharynx, and that contagion is spread by the

nasal or nasopharyngeal mucosa. Therefore, the nose and throat should be sprayed with some antiseptic solution such as peroxid of hydrogen or menthol in an alkaline solvent; though one will at once appreciate the difficulty experienced in spraying a young child's throat. The urine and feces also should be disinfected.

Medicinal treatment is largely symptomatic. Catharsis should be freely induced; blistering the spine causes suffering without producing results; hexamethylenamin (urotropin), which can be detected in the spinal fluid after its administration, should theoretically be of benefit, but its usefulness is limited to the epidemic form of anterior poliomyelitis as a prophylactic. Flexner and Clark have shown that it is possible to control the virus by drugs — "the results obtained have been by inhibiting infection, but not in restraining an already established infection." Flexner, during his recent visit to Chicago, stated that there "are one or more drugs full of promise in the future to prevent anterior poliomyelitis."

After the acute symptoms have subsided, efficient orthopedic care offers greater chances for improvement than at a later period when deformity occurs.

Prevention is the *watchword* in anterior poliomyelitis if the inevitable deformity is to be avoided.

Another problem also to be considered is *how to restore as far as possible muscular contractility*. Inasmuch as the paralytic muscles have a tendency to partial recovery within a limited time, this may be facilitated by appropriate treatment. In restoring muscular contractility one assists in preventing deformity, and conversely, by preventing deformity, one assists as far as possible in restoring muscular contractility.

It has been suggested by Oppenheim that immobilizing the spinal column, in the acute stages of the disease, will prevent or limit the destructive process in the spinal cord. This suggestion appealed to Lange of Munich who has recommended in the epidemic form the fixation of the spine in an orthopedic bed or by a plaster cast.

In the first few weeks following the attack, efforts should be made to keep the affected parts at rest, for the least possible harm is done to the weak and paralyzed muscle fibers. The cold affected parts, too, should be kept warm by proper coverings, by application of dry heat such as hot salt or the electric bag and later by baking. Heat not only stimulates nutrition but also causes muscular contractility in the weak and flabby muscles by restoring in a measure the normal tone of the affected parts.

Great reliance is placed in the use of electricity which is applied two or three times weekly by the physician until deformity stares him in the face. "One might as well water the branches of a dead tree in the hope of reviving its root as stimulate the muscles by electrical application with the idea of restoring the destroyed cells in the spinal cord." It will not influence the circulation and it is partly from the lack of sufficient nutrition to the muscles that atrophy is due.

Massage, on the other hand, is of value in stimulating local circulation, but must not be attempted until all sensitiveness of the affected

muscles has disappeared. It must be gentle, soft and soothing; not a rough, hard stroking massage. It must be continued over a long period of time. Following the massage, the affected parts should be sprayed alternately with hot and cold water which stimulates the vasomotor centers. This, in turn, increases the supply of blood to the parts as shown by redness and warmth.

As soon as the paralyzed parts show a tendency to recover, muscle training is of advantage. It brings into activity those nerve cells lying dormant in the spinal cord that are not beyond regeneration and whose impulses go to supply the weakened muscles. The part is passively moved to the limit of the normal range regularly twice daily. The patient is then encouraged to continue the motion as far as possible, completing it with the help of the attendant. In time a certain amount of increased muscular power is developed. Passive motion can also be carried out by mechanical aid devised for this purpose. These exercises should be carefully planned and, like massage, be continued over a long period of time. In this way, too, it is possible to prevent deformity by encouraging the paralyzed group to retract and the non-paralyzed muscles to relax. We know that stretched muscles considered as paralyzed for years may be only weak and these may be brought up to the highest point of efficiency if appropriately treated. Pürchauer points out that paralysis following the epidemic form of anterior poliomyelitis is often not an actual paralysis, but results more from overstretching of the muscles and in consequence loss of elasticity which simulate paralysis. He has shown in nineteen cases of paralytic pes equinus the extensors were overstretched, but when permitted to retract, they regained their function.

Measures to prevent deformity should commence from the very onset of the disease. Limitation of the normal range of motion has been noted within three weeks from the acute onset of symptoms.

The weight of the bed-clothing and the force of gravity will force the foot into the position of equinus if the dorsal flexors are paralyzed. A cradle to support the bed-clothing and a right angle wire splint or sand bags will secure the foot in a normal position.

During the period of partial recovery the proper application of a suitable brace will maintain the foot in the normal position, will guard against stretching of the paralyzed muscles and will make functional use possible—muscular power is increased more by functional use than by any other method. The objection often made to braces is that atrophy of the paralyzed muscle is increased by their use, but the fact is overlooked that disuse of the limb for any length of time is next in importance to the disease itself as the cause of atrophy.

I restrict myself at this stage to light metal splints and foot supports, keeping in mind that all thigh and calf bands encircling the limb should be loosely strapped so as not to interfere with the circulation. Plaster casts are, therefore, objectionable for this reason.

If there is paralysis of the dorsal flexors, the constant pull of the non-paralyzed muscles and the influence of gravity will force the foot into a position of equinus. To prevent such a deformity, I use a short caliper

splint, joined at the top by a calf band and fastened in front loosely by a strap; at the bottom the wires fit into a socket attached to the shoe and so arranged as to permit upward motion only of the foot. If the calf muscles be affected instead of the dorsal muscles, then the stop in the socket is reversed and downward motion is permitted.

Should the tibial muscles be paralyzed, together with the dorsal flexors, then in time there will develop an equinus valgus deformity. In such cases not only must the short wire splint be used, but also an arch support such as is commonly used for flat-foot. The inner border of the sole and heel of the shoe is raised to throw the weight toward the outer side of the foot. On the other hand, if there is paralysis of the peronei muscles, then the foot will assume the position of equinus varus. Such deformity can be prevented by the use of a light Taylor club-foot shoe which acts by the leverage of the upright bar throwing the foot into a corrected position. The brace is worn inside the shoe, of which the outer border of sole and heel is raised.

Should the paralysis include the anterior thigh muscles, the caliper splint must extend to the upper portion of the thigh with a wide band in back. A knee cap prevents flexion and a leather band in back of knee keeps the joint stiff.

When the improvement has reached the limit and the final stage of paralysis known, the leg may be braced more substantially, allowing motion to the joints wherever possible, care being exercised to prevent abnormal posture by the use of stop-joints. No matter how severe the paralysis, the member may be utilized as a prop with the aid of a brace.

There are patients, however, who eschew all forms of mechanical orthopedic appliances and seek surgical measures as a means of cure. For this purpose, the following surgical procedures are resorted to: arthrodesis, nerve transplantation, and tendon transplantation with periosteal insertion.

It is unnecessary to more than refer to these at this time.

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DISCUSSION

Dr. E. W. Ryerson: This disease is a most interesting one, and there is a large number of cases occurring in Chicago. I have seen at least twenty cases a year in the past three years and always in the fall. To-day I saw the nineteenth case, which occurred during September and October, 1911. If I see so many cases requiring orthopedic treatment, I am sure that the general practitioner seems many more mild cases. I think that we have in Chicago an endemic focus of this disease which is of considerable extent.

It is extremely doubtful if any medical or surgical treatment can at present be said to do any good in the acute stages of infantile paralysis. The use of urotropin can hardly be rational, inasmuch as toxins, not germs, cause the disease. It is nearly two years since this drug was first suggested in this connection, and while it is a prophylactic of some service, it cannot do much good after the paralysis is established.

Every effort should be made to prevent the contractions and deformities, because in little children the bones grow rapidly, and once a bone deformity has taken place it is necessary to do a severe operation to correct the deformity, even before any attempt is made to remedy the cause of the deformity. It must also be

remembered that there is constantly operating a force tending to produce deformities. It is not sufficient to correct only the existing deformity, but you must also do something to make it impossible for the deformity to recur. Tenotomy alone is not sufficient to do this. Braces will help in a measure, but the skin will stand only a certain amount of pressure.

The ideal way to treat these deformities is to attack the seat of the trouble, the nerves. Some years ago a great deal of interest was aroused in nerve transplantation. Spitzzy transplanted a paralyzed nerve into a slit made in a healthy nerve, in dogs. I operated in seven cases by that method, and in not one was it successful. I could not observe any return of power to the nerve. Murphy suggested splitting off a small portion of a healthy nerve and doing an end-to-end anastomosis. I operated twice by that method and both attempts were failures. I have, temporarily, at least, abandoned nerve transplantations.

We come, therefore, to the question of either stiffening the joints or transplanting some of the muscles and tendons to make a more perfect balance. Some of these patients are so hopelessly paralyzed that we cannot do a thing for them. It is impossible for some of these patients to learn to walk, even with the aid of braces. If they are strong, they can get along with crutches. In most cases of leg paralysis, we aim to get the patient to walk without the aid of cane or crutch. Fortunately, this can be done in most cases, though sometimes at the expense of a stiff joint at the knee or ankle. In many cases certain muscles can be transplanted so successfully that the patient can walk very well without the aid of cane or crutch.

Nearly two years ago I did a rather unusual transplantation, devised by Soutter, in which the result has been satisfactory to the patient. For six or seven years the boy had been wearing a brace, the calf muscles being entirely paralyzed. The foot was turned out and the os calcis was pointed nearly up and down. I lengthened the semitendinosus muscle with about 12 inches of silk cord and inserted it into the os calcis. I also transplanted the peroneus longus into the inner side of his foot. He now has distinct power in his heel. The silk cord can be felt to respond to the action of his hamstring muscles. He can flex his foot a little, and it is sufficiently strong so that he can be around without crutch or cane or any apparatus.

Some of the other cases in some of the younger children are more brilliant. I have a number of cases where the silk has been in place for three and four years, so that it surely cannot do any harm. I have used silk in over 200 cases, and in only one case did it come out or cause trouble. So that the silk does not act as a foreign body in the true sense of the word.

The arthrodesis operation is not an easy one to perform. I have done quite a good many, but one is apt to take out too little cartilage. The dangers of infection are not great. Children under 12 should not have the operation done because there is a greater liability to non-union than in older cases.

Dr. Julius Grinker: Owing to the number of interesting papers which have recently appeared on the subject of acute anterior poliomyelitis, one would be justified in believing that diagnostic errors are rare. The fact is, that mistakes are of daily occurrence. Before touching on the diagnostic difficulties, I wish to take exception to Dr. Jacobs' statement that when faradic excitability is once lost there is no hope for recovery. This seems to be the prevailing view among orthopedists. Nothing is further from the truth. Time and again do we see cases of peripheral neurone paralysis, in which the so-called reaction of degeneration is present (of which there are many grades), and yet in whom recovery occurs after a short or long interval. Another point in Dr. Jacobs' otherwise excellent paper deserves rigorous censure, namely, his statement relative to the futility of electrical treatment. If he means that electricity will never cause a nerve impulse to return to a paralyzed muscle, he is correct. Only a mere tyro in medicine can dream of hastening the process of recovery by electricity or massage. Neurologists and practitioners who advocate and practice the use of electricity in wasted conditions of muscles do it with one distinct object in view, viz., to keep up the nutri-

tion of a muscle which has ceased to receive trophic impulses from its nerve cell because of interruption of activity, either temporary or permanent. Shall we permit such a muscle to wither into a tendon, so that when the desired nerve impulse eventually arrives, it shall find no muscle to contract, or is it our duty to keep up muscle nutrition artificially? In my opinion there is only one answer to this question. We have no right to prevent recovery by inactivity. Neither plaster-of-Paris bandages nor splints will do more than prevent deformities, or even correct them. By diligent treatment with electricity and massage we maintain and retain the muscular integrity until regeneration occurs. Should nerve power fail to return, we have lost nothing.

One of the speakers mentioned the large number of recoveries in acute poliomyelitis. It is quite necessary to know what one understands by recovery. If one means that the patient does not die from the disease, then the percentage is larger; however, if we are to understand that patients recover their muscular strength and are capable of following their usual occupation after an attack of acute anterior poliomyelitis, the number is too high. My experience teaches me that the great majority, with but few exceptions, sustain irreparable damage in their musculature. In line with this point I wish to state the case of a patient who developed sciatica in the right lower extremity, for which I was consulted. During the routine examination I discovered that the left Achilles tendon was absent. On further investigation the left leg was found to be one-half the diameter of the right one and also considerably weaker. The patient had forgotten that he ever had any illness in connection with the affected extremity. The truth was disclosed when I learned that he had had some illness accompanied with paralysis when he was 2 years old. Here was a complete recovery. Was it complete?

Diagnostic errors in acute anterior poliomyelitis are fortunately not frequent when compared with other forms of nervous disease. However, one must be on his guard not to diagnose multiple neuritis because pains are present in a paralyzed extremity, in which there is also absence of reflexes. We must bear in mind that since we have learned of the existence of the meningitic and neuritic varieties of acute anterior poliomyelitis, pain is not at all infrequent in the beginning of a case of this disease. I believe the very acute onset of the paralysis and the finding of asymmetrical muscle wasting, if the disease occurs on both sides of the body and also the observation that there is either a triplegia, or if a quadriplegia be present, that one arm is usually more affected than the other and that one leg more than the other should decide the diagnosis in favor of the spinal disease.

A diagnostic error to be avoided in a young adult who suffers from headaches, malaise, insomnia and suddenly develops paralysis, either of the hemiplegic or paraplegic type, is syphilis. One must recollect that not every case of paralysis in a young adult is due to specific disease. As is well known, in the recent epidemics of poliomyelitis, adults were frequently affected with this disease. Several years ago, before we had opportunities of seeing the so-called infantile spinal paralysis in adults, I was called to see a case of paralysis of this type in a man aged 32 years. My diagnosis was spinal syphilis, and a rigorous antisyphilitic course of treatment was advised. The next visit, two days later, revealed an asymmetrical atrophic paralysis, and the diagnosis was changed to acute anterior poliomyelitis. At that time I flattered myself to have seen the oldest case of infantile spinal paralysis on record. I found that others in different localities had seen older ones.

In conclusion, I would suggest that in every case of acute illness one should examine the condition of the deep reflexes, as they may disappear before paralysis has declared itself. In one case under my observation the history was obtained that the patient had developed paralysis after the acute illness had lasted about ten days, during all of which time the patient could still get about. In other instances the patient may experience some weakness in one extremity,

later in another, and perhaps the next day in a third, to be followed by paralysis in all four extremities, but of unequal intensity.

Dr. George W. Hall: I think many general practitioners are ignorant of the proper use and value of electricity, and therefore they derive no benefit from it. Galvanism is as much indicated in some of these cases as is orthopedic surgery or other measures. The reason that better results are not obtained from its use is that it is not properly applied. There is no doubt in my mind that it helps to keep up the nutrition of the muscles involved, although it has no influence on the cells in the anterior horns in the spinal cord. It certainly is of value during the period of reaction of degeneration, while faradism, on the other hand, will probably do harm during this period. Galvanism might also do harm if applied in too strong a current. The mildest current should be used that will cause contraction of the diseased muscle. The current should be measured as accurately as a dose of medicine. This can be done by using a milliamperemeter. The affected muscles should be stimulated two or three times only during each application once a day, and not contracted for ten or fifteen minutes at a time, as is so frequently done. If the muscles do not show the reaction of degeneration, then the mildest faradic current that will contract the muscles should be applied. Some of the points in the differential diagnosis of infantile paralysis that should be dwelt on are the findings in the spinal fluid. It is difficult sometimes to differentiate between tuberculous and the meningitic type of this disease. The tubercle bacillus is neither easily nor frequently found in the spinal fluid by the general practitioner. Poliomyelitis is more acute in its onset, but after the acute symptoms have subsided the patients become stuporous and resemble quite closely tuberculous meningitis.

Dr. Wallace Blanchard: In Europe arthrodesis of the knee-joint has been superseded by a recurvatum operation. It consists of a supracondyloid osteoclosis or osteotomy, according to the age of the patient, and then changing the direction of the condyles forward about 30 degrees and putting in plaster, so that when the plaster cast is removed after six weeks the patient throws the leg forward and locks the knee with each step. Flexion remains unimpaired. It is in every respect a much better operation than arthrodesis.

Another operation that is very popular in Europe at present is that of skin shortening. It is done in cases in which ordinarily a tendon transplantation is performed. If a paralytic foot is in position of equinovarus the foot is forcibly straightened. Then a round section of skin on the outside of the foot about the size of a silver dollar is removed. The wound is then closed with stitches so as to shorten the skin on the outside of the foot. This operation is more effective in many cases than tendon transplantation. It holds quite firm for four months; after that it begins to loosen up. In a few cases the contraction of the scar tissue continues to hold the foot quite well. Tendon transplantation is not performed as much in Europe as it was on account of disappointing results.

Dr. J. W. Jobling (closing the discussion on his part): I think the absence of changes in the spinal fluid is of considerable value, particularly in those cases presenting the symptoms of an acute meningitis.

Demonstration of the tubercle bacilli is the only means in some instances of differentiating between tuberculous meningitis and infantile paralysis. We believe the bacilli can be found in nearly every case of tuberculous meningitis if the proper technic is used.

In many instances failure to find them is due to faulty technic. The fluid should be collected in three test-tubes. The first contains fluid which is frequently mixed with blood; but the second and third usually contain clear fluid. The first tube should not be used for the Noguchi test, but can be incubated for bacteria. The second is placed in the ice-box until the following day, and the small coagulum which has been formed is stained for tubercle bacilli. We find them in about 100 per cent. of the cases, although it may be only after a search lasting for hours. The third tube we usually use for the Noguchi test, because

it is least likely to contain blood. If the spinal fluid is collected in this manner, negative results are often of great importance.

Dr. Charles M. Jacobs (closing the discussion on his part): The discussion which has taken place this evening in opposition to my view on the inefficiency of electricity in anterior poliomyelitis was anticipated. As the hour is late, I do not believe that I should prolong the discussion. However, I wish to emphasize that we cannot revive nerve cells that are dead, but cells lying dormant can be stimulated by the methods described. Replying to Dr. Grinker: The object of a brace is not to immobilize the joints, but to prevent deformity to guard against stretching of the paralyzed muscles, and to make functional use possible which increases muscular strength.

Dr. Peter Bassoe: As for pain and tenderness in poliomyelitis, it must be emphasized that it practically always occurs at first, and may last for months and months. I have a case now where muscular tenderness has been present for four months. In cases of multiple neuritis, especially alcoholic neuritis, we are often merely dealing with degeneration in the nerves, not an interstitial process, and this degeneration causes a great deal of muscular tenderness. In poliomyelitis we are dealing with secondary degeneration of peripheral nerves and also meningeal irritation, so that there are two reasons why there should be tenderness.

I want to emphasize one point in the pathology, namely, that thrombosis does not play any part in the production of the lesion. Thrombosis was found in only one case, reported by Batten of London. In large epidemics, where hundreds of cases were examined, no thrombosis was found. On the other hand, many cases of "transverse myelitis" with paraplegia are not cases of inflammation of the cord, but of thrombosis with subsequent sclerosis.

Dr. John L. Porter (closing the discussion): Dr. Ryerson's case is a very instructive one, because the silk served the purpose of doing the work until the gastrocnemius had the power to regain some of its function. As to the silk being a foreign body, I still think that it is true. It becomes infiltrated with connective tissue and is useless. I think that is the condition in Dr. Ryerson's case. The silk tendon no longer does service as a tendon.

Dr. John Ridlon: Braces should be used to prevent the development of deformity and to enable the patient to use the affected limb better than can be done without a brace. In doing an operation we must consider carefully what we are trying to do, whether it is worth while doing it and are we really doing it. I think there are proper cases for tendon transplantation, although most of these operations have been worthless. I prefer to correct the deformity in the simplest and easiest way; then hold the limb still for a long time, so that there is a chance for the muscles to regain some of their strength. We must give the patient the best functional result possible, no matter how it is done. Most cases will improve, as is evident from the discussion. Some men think that they effect a cure with braces, some with operations, some with electricity, some with hot applications along the spine, some with faradism and some with galvanism! Surely, God is very good to the paralytic!

EUGENICS—A PLEA FOR A BETTER RACE

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From the earliest record of mental aberration down to our own time, much has been advanced concerning the supposed causes of mental disturbances. Classification or tags, if you will, many of them quite elaborate and confusing, have from time to time been devised. These classi-

fications, as a rule, would have but a brief existence, being pulled to pieces or altogether forgotten.

I venture to say that not one text-book out of ten on psychiatry will devote one-fifth of its pages to the treatment of the mentally afflicted, the other four-fifths will be given over to elaborate placarding of the various types and fine-drawn psychologic or illogical discussions of the same.

While the treatment of mental disease has been sparingly considered, the prevention of insanity has received only a passing thought. This latter statement may be a little broad, because from time to time individuals have forced themselves into the limelight of publicity by announcing what should be done to check the alarming increase in our hospitals for the insane. After the ardor and excitement of public opinion had cooled, the good intentions were forgotten and laid to rest until some wave of reformation again appeared on the horizon.

I do not wish to discredit whatever honest ideas may have been from time to time advanced and failed from lack of interest. This latter has been the means of many men halting by the wayside and permitting opportunity to die. Fear of public criticism retards many good efforts that would aid in relieving the unfortunate. The greatest shame of all is the lack of knowledge and fear by professional men of all classes to stem the ever-increasing tide to mental decay.

In the past few years the daily press has contained column after column on the so-called cures being effected in the institutions for the insane, without a word of advice to keep them from again becoming public charges. Our medical journals rarely contain anything pertaining to mental hygiene, even periodicals devoted to psychology and psychiatry.

The clergy from their pulpits make feeble efforts in trying to direct their people along lines of health, both mental and physical, but alas, how often are they, themselves, mistaken!

Nature has frequently demonstrated that a habit grown old is hard to change. We cannot get away from the saying, "As a twig is bent the tree is inclined." Why not, then, begin in the springtime of life to mould the child? When he passes into youth and manhood there will be nothing to regret if the early training has been what it should.

Physicians should learn the necessity of giving the required information concerning the development of mankind. To bring about a condition whereby such instruction could be given, the establishment of not only a national but a universal organization, having for its object "the prevention of insanity" should be formed. This may seem a gigantic task; but other organizations of world-wide reputation, such as the Red Cross and Anti-Tuberculosis societies, had their beginning. Why not one for the prevention of insanity? A purpose of this kind should interest not only men of medicine, but members of all professions and the public-spirited working toward one great end. The more unfortunate of mankind could be instructed in looking toward the betterment of their condition and the bringing up of their children.

It is needless to repeat how these two things alone could be improved in the congested parts of all great cities. The father and grown children of the Ghetto family have little to look forward to after leaving their crowded and ill-ventilated rooms for the day, working in the crowded shops and department store, where conditions in some places are none too good; existing on little or nothing, morning, noon and night. If after these hardships they had some place free from filth to rest their weary heads, we might see less disease, both mental and physical.

Things are not easier for the mothers and younger children left at home. The youngsters as a rule know nothing but the streets and vices common in such districts. The poor mother, the victim quite frequently of excessive child-bearing, ill nourishment and overwork, and in many cases abuse worse than a beast of burden. Among these people, then, a "Society for the Prevention of Insanity," working conjointly with the Anti-Tuberculosis League, could do a vast amount of good.

But it is not alone with the children of the poor that habits for the future should be moulded. Many a child of the idle rich and great middle class would have more respect for their elders in the years to come if there had been a more judicious application of the switch. It would also aid in keeping some out of the jail or asylum.

It is not an infrequent sight to see a mere infant control its parents. The child may want a toy or to dabble at the table. The fond parent at first objects, but after a series of crying, rolling on the floor or kicking the table, "Jimmy" usually wins out. This is the procedure, I am sorry to say, in a large number of American families. These outbreaks of passion go from bad to worse as the years grow, until a condition develops requiring confinement in some sanitarium for treatment. Every hospital physician has witnessed cases of such description. A little training in early life would help the individual in his struggle for existence.

The children of the wealthier classes have to contend with many things—neglect on the part of the mother is the most dangerous. At a tender age the infant may be turned over to a strange nurse, of whose life and habits little is known. Employment of wet nurses should be discouraged by all physicians, owing to the great danger of transmitting specific infection to a healthy youngster. As the child grows older, the estrangement from the parent becomes wider, and vicious habits may be acquired by consorting with servants. Many a frail hot-house constitution has been greatly damaged through such a source.

So, while the children of the poor are in danger of the evil effects of overcrowding, poor nourishment, bad training and the vices of the street, the children of the better classes are the victims of neglect, the possibility of specific infection through the wet nurse and bad habits contracted from servants. The evils of bad sex hygiene come alike to both, whether they hail from the boulevard or the crowded alley. These conditions could be easily remedied for rich and poor alike if some organized effort on the part of the general public could be started.

Medical men should be taught to speak frankly on matters of sex hygiene to those with whom they come in contact. Weekly or monthly

lectures, free of charge, should be given on this matter and also on general hygiene in all districts where foreign-born citizens reside, as most of these people do not know how to live. What is known as the "better class" would be a little harder to reach; but by means of systematic organization in arousing the public interest the object could finally be accomplished.

After the child has passed the nursery stage, the dangers of mental alienation are increased instead of diminished. Great care in forming correct habits now requires constant attention. Many parents lack good judgment in this matter.

Following this period comes the great question of education. In many localities this one condition alone is of vital importance. The school teacher who now becomes the child's trainer, in the vast majority of cases, lacks something in her finishing. It may be due to neglected opportunities in his or her early days, or it may be due to lack of judgment or good common sense. As a rule, they have not been trained in the matter of judging mental capacity. The teacher may be trying to make a record with the directors, who know less about mental equality than the teachers themselves. Or one of the directors may have a son or daughter in school and the teacher's position depends on advancing the said son or daughter rapidly from one grade to another, without taking into consideration what the child can do. The consequence is a breakdown, resulting in a mental state beyond repair. What exists in the rural districts is equally true of the cities. In many cases the city teacher is as incompetent as her country sister.

We need a complete reorganization in lines of instruction. A real educational system; one which recognizes limitations; one which recognizes distinctions, and is not based on false and vicious presumption of the equality among minds. This matter of our faulty educational system is of such gigantic proportions that it should receive some consideration in the causation of mental troubles.

A far-seeing physician, interested in infant hygiene, has caused a revolution in Italy by changing the attitude of teacher to child, and vice versa. This method of education, known as the Montessori system, is attracting the attention of scientists interested in childhood welfare in all parts of the world. While it has been in practice only four years, much has been accomplished, and it only remains for time to show what it will do for the development of the race.

At this juncture, permit me to quote from a letter by Charles Eliot to Arthur Burrage Farwell:

Another subject which ought to be publicly discussed among teachers and parents is the addition to our school programmes of instruction in normal reproduction in plants and animals, sexual hygiene in the human species and the horrors of sexual vice.

The introduction of such lessons on the sex relations and purity in our schools is very interesting. Personally, I feel that the subject should not be confined to our public schools. Private schools and colleges likewise should include such a course in their curriculum. At present, such

a procedure is not possible, owing to the fact that few people would be capable of presenting it in a wise and proper way. Until special courses and teachers generally have become educated on the subject, it would probably need to be presented by a few selected teachers who would make that their specialty.

After the school period, there comes a time in the lives of all where strict guiding by the elders would save many unhappy hours. Unfortunately, in this age, conditions are usually reversed; the offspring governs the parent. The home loses its cheerfulness; the advice of the parents is ignored, and evil companions point out the way for willing feet to travel. The most vicious of the so-called amusements for the young—the public dance-hall—becomes now the place for recreation. From the dance-hall the youth wanders to its sister in vice, the saloon.

No hospital physician questions the direct relation of cause and effect between alcohol and certain types of insanity. There are some forms of insanity to which the use of alcohol is believed by many to be a contributing cause to an extent as yet undefined and uncertain. But there are other types where no difference of opinion exists. They are due, directly and exclusively, to the use of alcohol. Its discontinuance may be followed by recovery, but its continued use means insanity and early death. If it were generally known that the habitual and excessive use of alcohol leads hundreds of men and women every year to the doors of the hospitals for the insane, there might be fewer instances of its constant use.

A strong effort is being made to change public opinion regarding these two latter evils. If the change ever does come, many a young man and woman will be saved from vice and the madhouse. But until there is a general uprising in all walks of life, the dance-hall and saloon will go on initiating candidates to the road of destruction.

Within the past few years the cheap theater has become quite prominent. Many people claim they are instructive and furnish means of enjoyment for the poor. It is possible the minority of them do. On the other hand, there is a tendency for the display of the vicious and obscene, which, to my notion, only develops in us a lowering of moral tone. I do not advocate the abolishment of places of amusement where the working-man and shop girl can spend an hour or so in the evening. Why cannot these places be made more instructive, so as to educate those who do not know, in the proper methods of living; show them the effects of vice and help them to steer clear of the madhouse, instead of picturing suicides, crime and disregard for all moral law?

The Eugenics Section of the American Breeders' Association recently sent out blanks requesting information concerning the human family, in order if possible to discover the laws governing the inheritance of physical and mental characteristics. One of these blanks asks for data regarding "inheritance of musical talent." I hardly know how the question could be answered as applied to the jumble of harsh tones pounded out on the pianos and shrill voices of the singers in these cheap theaters.

Why is it not as easy to give us good music? Do not the wealthier classes pay fabulous prices to hear interpretations of Chopin, Wagner or

Rubenstein? Our less fortunate brother would soon learn to appreciate these interpretations if he had an opportunity to hear them. What a difference it would have on their nervous systems. Why, therefore, can we not have places of amusement where good music, both instrumental and vocal, is within the reach of all? Some of our wealthy men might build everlasting monuments to their memories by founding institutions of musical learning. Such conservatories could be located in the poorer districts, where they would do the most good.

Dr. Ludwig Brunner of the Berlin Imperial Academy of Medical Research recently made the statement that "America is being driven crazy by its rag-time music." If such is the case, where will we land if the noise from the 5-and-10-cent show is not soon checked?

At the adolescent period individuals are more or less susceptible to external impressions. For this reason, the so-called freedom of the press should be curtailed. The printing of reports of sensational suicides, murders and murder trials, works considerable harm among certain classes.

Dr. William S. Wadsworth, Philadelphia, writes as follows, under the title of "Newspapers and Crime":

From my professional study of the subject, I have no hesitation in pointing out that newspaper accounts of crime influence those who commit crime. We are having, just at this time, an epidemic of cyanid poisoning that we predicted would result from the lurid newspaper accounts of a crime committed some months ago. It is for the protection of those accidentally potential, and congenitally defective, that we plead for methods of prevention. The fight is not against the press as such, but against its pollution.

A certain city paper, not in Illinois, however, makes a specialty of all the racy stuff it can get hold of. The office staff rake the country with a fine comb for all the lewd matter to be found. I am sure, if their journalistic energy, together with the combined effort of the American press and public, would taboo the sensational, a large number of the young people would be better citizens and fewer public charges.

Francis Fenton of Mount Holyoke reports an analysis of some fifty-seven different newspapers from different sections of the country. From this analysis he comes to the conclusion that the average percentage of news alone which should be drawn from the columns is 23.02 per cent. for the highest and 7.94 per cent. for the lowest. The average percentage of all kinds of anti-social matter, excluding advertisements in the entire paper, which should be removed is 8.11 per cent.

Bills have been introduced in the legislatures of several states bearing on this subject. The last session of our legislature considered such a bill, but it failed to become a law. Neurotic and sensational books add their share in assisting the ever-increasing numbers of the insane. For such publications like the newspapers, laws should be enacted establishing a censorship, if need be.

During the youth of all young men there comes the great danger of casual immoral relationship that they seek with more or less regularity. A large number, consequently, wreck their character and their health. The immensity of the social evil problem is no excuse for us to stand idly

by and do nothing in an attempt to solve it. The sin of impurity may not be overcome in a day, a year or perhaps in generations. But we assume that by earnest, wise, united and persistent effort on the part of individuals and organized groups of society, we can do something; how much, we can only discover by trial. To say that we can do nothing may be left to the morally inert; of course, *they* can do nothing but evil.

"We may enact laws; we may appoint commissions; we may abuse civic administrations for their handling of the problem, but the problem will remain just as long as the public conscience is dead to the issue or is indifferent to the solution."

Furthermore, the overwhelming majority of citizens *never* will countenance the recognition or regulation of a commercial business which spells only ruin to the race. It is therefore incumbent on us to take a bold stand against this curse of society. It behooves us to raise the social life to the highest possible standard of righteousness, to teach the youth of our land loyalty and honor to womanhood.

Dr. David Starr Jordan has said: "Thus far the only safety in dealing with the plague is to abolish the plague spots, to destroy the centers of infection. To deal with the red plague we must destroy the houses of prostitution. To abolish these houses the only sure way is to attack their owners. To punish the inmates serves no purpose. These live in eternal torment already."

Upton Sinclair, in *The World of To-Day*, October, 1911, states: "Some 50,000 women every year in this country are driven into the ranks of that most pitiful class, the professional prostitute." If this be true, can we get away from the reason? Is it not due to our present mode of living, useless display of wealth and disregard for the laws of society? Is it any wonder that with 50,000 souls added yearly to the great army of vice we are clamoring for new buildings and more room in our state institutions?

Over the door of every immoral resort might truthfully be hung "Incurable Insanity May be Contracted Here." If self-respect, the desire of the good opinion of others, the influence of religious training and the attractions of home life are not sufficient to prevent this kind of wrongdoing; the danger of contracting a disease which may result in incurable insanity should be sufficient. Who can doubt that if these facts were generally known to the public, as they are known to the physicians familiar with mental disease, they would have a profound effect on the conduct of the average man.

People prefer health to sickness, sanity to insanity, freedom to incarceration. If men and boys know that syphilis may mean paresis and early death, there would be less consorting with prostitutes. When the time arrives that the standard of manhood is raised, some of the most distressing scenes in hospitals for the insane will be a thing of the past.

While we are making war on public vices, a greater source for spreading the gerin of venereal disease is quietly working like a thief in the darkness. I refer to clandestine prostitution.

In a certain coeducational school one member of the faculty, a specialist in venereal disease, states he has treated nearly 90 per cent. of the

student body for gonorrhea, a large number of both sexes being infected. One female student, he knows positively, infected ten males. This example is one reason why courses on sex relations and purity should be introduced into our halls of learning.

Too much secrecy on the part of the profession concerning the victims of venereal infection only aid the nefarious practice. There should be more publicity regarding venereal infection. The laws of health compel us to report diphtheria, small-pox and scarlet fever. To this list of dangerous diseases should be added gonorrhea and syphilis. The effect of free instruction in and out of school life on the evils of this form of prostitution, together with the exposure of all cases of infection, no doubt would be beneficial. It would probably save many hours of suffering for numerous young men and women during their married life.

The perplexing problem that faces the world to-day regarding the marriage question is enormous. Judge Goodnow recently, in an address before the Woman's Club in Chicago, stated: "It is too easy to get a license to marry." Not only are our laws lax in granting permission to marry, but a weak and immature judgment impels many into that state without mature thought or deliberation. Some restrictions should be drawn concerning the marriage relation. Our public officials are very careful before granting licenses for almost everything else.

The Chicago Vice Commission has tersely put it as follows: "An applicant for a license of any kind, whether it be to construct a house, run a push cart, peddle shoestrings or keep a dog, must be accompanied with evidence that the applicants are responsible and reliable agents. But for a marriage license, *one person*, unattended and unknown, and, as far as one can know, an epileptic, a degenerate or who has in his blood a loathsome venereal disease, may pass his name through a window with that of a similarly questionable female, likewise unknown, and be granted the divine right to perpetuate his kind in turn, thereby placing a burden and blight on society and the community for generations to come."

How true this is. Daily we read of the indiscriminate granting of licenses to marry; spontaneous unions, if you will, where seriousness of life is lost sight of; where there is little thought for the future; where the finer instinct of morals is swept to the winds and the holy sacrament of marriage becomes a civil contract. The original purpose is lost sight of. Instead of adjusting the sex relations of men and women to secure the breeding of the best children, this civil contract becomes marriage plus prostitution.

What is the result? Look around on all sides. The heat of passion soon wears off, the unfortunate girl in her blindness is probably united with a criminal, a drunkard or a degenerate. After a short time she is left alone, in a great many cases with offspring, and worries herself into an institution to become a public charge. Or she may contract a loathsome venereal disease, and to hide her shame she may join the ranks of the army of professional prostitutes and sow the seed for mental affliction in fertile soil.

The Rev. George Chalmers Richmond, Philadelphia, states: "The underpinning of our national life is threatened by our laxity of ideas regarding marriage." This is only too true. The example for fashion and custom is usually set by the leisure class. If public opinion could be changed from what it is at present, a more rigid observation of moral law might be forced on these people. The rest of us would be better citizens, and the neurologists and psychiatrists would have to turn their attention to other fields.

Within the past year the attention of the whole nation was riveted on the announcement that a wealthy New Yorker whose wife had divorced him was about to be married to a pure young girl hardly fit to be away from her mother's care and the quiet and peace of her own home. This is not the only flagrant disregard for the setting of a good example by our first families. Almost every day some farce is staged at Newport or Palm Beach, making us the laughing stock of the world.

A more rigid observation and reverence, if you will, of marriage laws should be enforced, applying to rich and poor alike. Why cannot our churchmen of all denominations bind themselves together and assist our lawmakers and the public in framing laws to prohibit the union of diseased and undesirables, and compel all to furnish medical certificates when applying for a license, showing a clean bill of health? Why not drive out "the marrying parson" and the squire who never examine closely the fitness of the contracting parties to unite in the holy bond of matrimony? Their one question is: "Have you the license and the price?" I am sure, with more careful laws in force regarding the issuing of marriage licenses, and a closer observation of moral law on the part of those already married, much of the misery flesh is heir to would diminish.

A large part of this reform must be brought about by the clergy in moulding public opinion. Some of our churches are at present trying to bring about a more stable condition regarding the laws of marriage. They cannot reach their goal unassisted. The united effort of the press and public must be obtained before the end can be seen. I sincerely hope the time will come when we will no longer have use for our "Courts of Domestic Relations," when heartbreaking and sorrow will be banished from the land and all live peacefully in Arcadia. Until then we can hardly expect to have anything but shattered nervous systems from unhappy family ties.

What our nation needs is a revival of domestic purity and marriage sanctified to its end. It needs a standard of morals which applies equally to both sexes and all classes; that makes no appeal to the divorce courts for mere convenience or change. It needs education in the essential things of sex life.

The question now comes, What are we doing to prevent the insane and feeble-minded from perpetuating their kind? Truthfully, are we doing anything? The cases come and go, like the seasons of the year. It is not an uncommon occurrence to hear of the marriage of a paroled or discharged patient. At present I can recall the marriage of two epileptics, one an escaped patient, the other only released from the hospital after a

vast amount of pressure by relatives and friends had been brought to bear on the superintendent. I am very sorry to state that two of our most prominent physicians were foremost in asking for the release of this man. Shortly after his discharge I was shocked to hear of his union with a healthy girl. Liberating such an individual and permitting him to perpetuate his kind is a disgrace.

Davenport and Weeks, in a recent study on the "Inheritance of Epilepsy," state: "There is evidence that in epileptic strains the proportion of epileptic children in the latest complete generation is double that of the preceding." Such being the case, is it not time that some consideration was given to checking the transmission of neuropathic traits? The means advocated are permanent segregation in colonies and sterilization. Segregation in colonies entails an enormous expense, while it would be less trying on the parents and most acceptable to the main body of opinion. I cannot see how segregation is feasible at present.

The sterilization of the unfit is being given attention in many quarters. The matter was considered to some extent by our last state legislature. Connecticut passed a law some two years ago for the sterilization of the insane and feeble-minded, but so far it has remained a dead letter. In a recent communication from J. W. Keniston, he states: "So far as I can learn, not one operation has been performed in this state. Some of us are hoping that active measures will be taken before long, but thus far it has been only a hope."

March, 1907, the Indiana legislature passed a bill authorizing the sterilization of "confirmed criminals, idiots, imbeciles and rapists in the state institutions of Indiana." Over 800 convicts have been sterilized, some by authority of the state, but over 200 of them at their own request.

In February, 1909, the Oregon legislature passed a bill for the "sterilization of hereditary degenerates," known as the Dr. Owens-Adair Bill, but it was vetoed by the then presiding governor. The bill was again presented to the legislature of 1911, but failed of passage.

The Iowa legislature passed an institution bill, becoming effective July 4, 1911. So far as I have investigated, to my mind this bill is about the best that has been passed by any legislature. Permit me to quote Section 1:

That it shall be the duty of the managing officer of each public institution in the state, intrusted with the custody or care of criminals, idiots, feeble-minded, imbeciles, drunkards, drug-fiends, epileptics and syphilitics, and they are hereby authorized and directed to annually or oftener, examine into the mental or physical condition of the inmates of such institutions, with a view to determining whether it is proper or inadvisable to allow any of such inmates to procreate; and to annually, or oftener, call into consultation the members of the State Board of Control. The members of such Board and the managing officer and the surgical superintendent of such institutions shall judge of such matters. If a majority of them decide that procreation by any of such inmates would produce children with a tendency to disease, crime, insanity, feeble-mindedness, idiocy, or imbecility, and there is no probability that the condition of any such inmate, so examined, will improve to such an extent as to render procreation by any such inmate advisable, or if the physical or mental condition of such inmate will be, ultimately, improved thereby, or if such inmate is an epileptic, syphilitic, or gives continued evidence, while an inmate of such institution that he or she is a moral

or sexual pervert, then the surgeon of the institution shall perform the operation of vasectomy or ligation of the fallopian tubes, as the case may be, upon such person.

New Jersey has fallen into line, for on November 23 last the Wight Bill became effective. The enacting clause of this bill reads: 'An act to authorize and provide for the sterilization of feeble-minded (including idiots, imbeciles and morons), epileptics, rapists, certain criminals and other defects.' The preamble is as follows:

"Whereas, heredity plays an important part in the transmission of feeble-mindedness, epilepsy, criminal tendencies and other diseases, etc."

In Ohio several times bills have been introduced along lines similar to the Indiana law, but never brought to a vote in either branch of the general assembly. At a recent session of the Pennsylvania state legislature a bill to prevent the procreation of idiots by the process of sterilization was considered, but failed to pass the house. The legislature, by joint resolution, appointed a committee on segregation and care and treatment of the feeble-minded and epileptic, to make a report at the next session of the legislature. This committee is at present at work. In old Virginia, the question has been before the last legislature, but, so far, I do not know whether or not it has become a law. From a reliable source, I understand that the governor of Vermont is very much interested in the question of sterilization of human misfits. At the next session of the legislature in the state of Texas a bill will be introduced along these lines. From the foregoing it is evident that the prevention of procreation by defectives, through sterilization, is not an iridescent dream.

Several states, Minnesota, Delaware, Michigan, New Jersey, Ohio and North Dakota, have enacted restrictive marriage laws, forbidding the union of feeble-minded, epileptics and insane women under forty-five. But, as Dr. William T. Belfield has stated: "Marriage is nowhere essential to procreation, least of all among the mentally defective, and such laws, even if rigorously enforced, would not efficiently restrain the breeding of irresponsibles."

That the dependent class are increasing, is clearly shown by the fact that at each session of our legislature there are ever increasing demands for the enlarging of the institutions we have, and for the erection of new institutions for the detention of this class. Thousands of dollars are expended yearly in advancing the best methods of breeding registered live stock, still we have done nothing practical in the way of providing a means by which we may get none but sound offspring and thus establish a nation, physically and mentally sound.

The most efficient means so far advanced for the sterilization of the human misfit is that of "Vasectomy." The result is best described by quoting from Dr. Henry C. Sharp, former physician to the Indiana Reformatory:

Since October, 1899, I have performed an operation known as "Vasectomy," which consists of ligating and re-secting a small portion of the vas deferens. This operation is, indeed, very simple and easy to perform. I do it without administering an anesthetic, either general or local. It requires about three minutes' time

to perform the operation and the subject returns to his work immediately, suffers no inconvenience and is in no way impaired from his pursuit of life, liberty and happiness, but is effectively sterilized. I have been doing this operation for nine full years. I have two hundred and thirty-six cases that have afforded splendid opportunities for post-operative observation and I have never seen any unfavorable symptoms. There is no atrophy of the testicles; there is no cystic degeneration; there is no disturbed mental or physical condition following, but, on the contrary, the patient becomes of a more sunny disposition, brighter of intellect, ceases excessive masturbation, and advises his fellows to submit to the operation for their own good.

The operation on the female is more difficult, but if skilfully done, is no more hazardous. The oviduct is reached through a median incision, the tube ligated near the uterus and severed beyond the ligature.

The opponents to sterilization claim that with the inbreeding which is common among the feeble-minded, there is a trend toward natural sterilization; but is this the case? Rosanoff and Orr, in a recent study of heredity of insanity, state as follows:

It will be borne in mind that an individual who is normal but who carries the neuropathic taint and is capable of transmitting it, can have neuropathic offspring only when his mate is neuropathic or normal, but, like himself, carries the taint.

A group of subjects, who are capable under the above mentioned conditions, who marry freely into the general population, selecting mates more or less at random, will show by the relative frequency by which they produce neuropathic offspring, how common in the general population will be persons who carry the neuropathic taint.

From their further observations conclusions have been arrived at that:

Thirty per cent. of the general population, without being actually neuropathic, carry the neuropathic taint from their ancestors and are capable, under certain conditions, of transmitting it to their progeny.

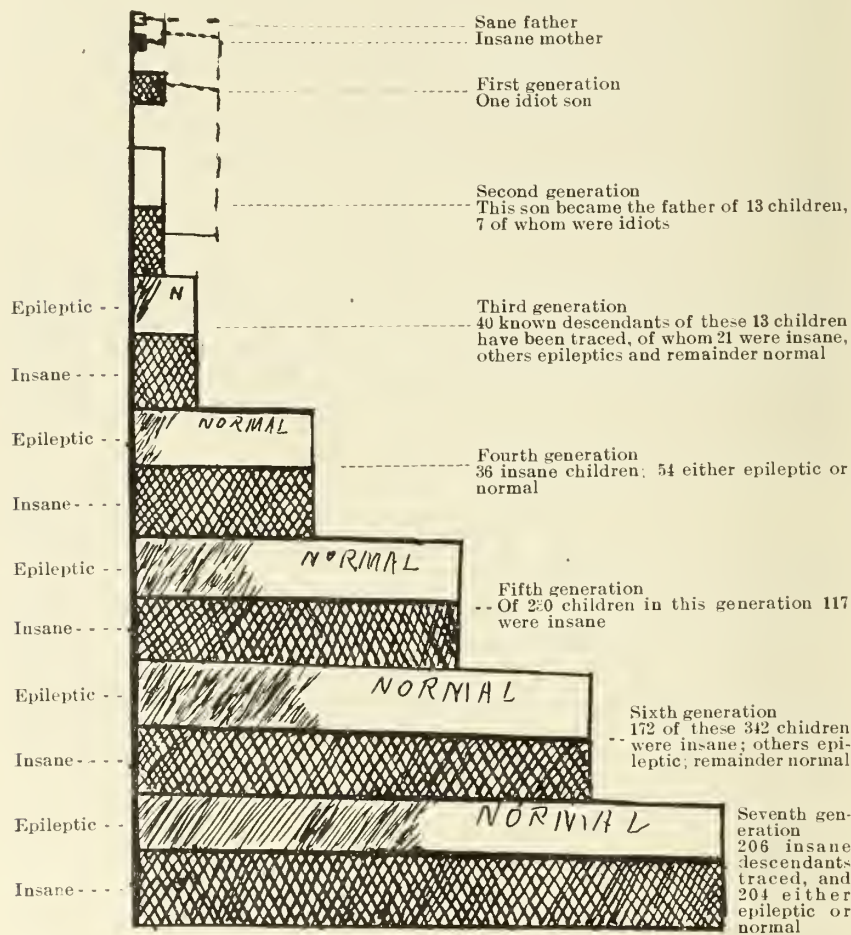
We are all, more or less, familiar with the history of the two wild sons of an early Dutch settler in New York state marrying sisters. Of their 1,200 descendants, careers of 709 have been traced. Of those traced, 280 were public paupers, 140 were criminals and a very large number were depraved, diseased and insane. In seventy-five years that family cost the people of the United States \$1,308,000. They are known as "The Jukes." But the Jukes family is by no means an exception.

Permit me to quote from the report of the "Illinois Society of Mental Hygiene."

A young woman was received at the Detention Hospital. She was married and had two children. At the inquiry it developed that both she and her mother had been sent to one of the State Hospitals some ten years ago. The mother remained there, and, ultimately died; but this patient was released from the hospital in a short time. She married, when an opportunity offered itself, without telling her husband about her past illness. The children are too young to determine their exact future, but we can readily make an estimate of the chances in life of these children, when we consider the additional family history revealed through the investigation of the nurse. On the mother's side, the mother, the mother's brother and uncle were insane. On the father's side, a cousin was afflicted in the same way. Last, but not least, two brothers of the patient, were, also, mentally afflicted. If the girl had been properly looked after when she left the institution, a part of this misery could have been prevented.

The following I extracted from an article, "The Curse of Heredity," that appeared in the *Cairo Bulletin* some few months ago:

At the present time, Dr. Henry H. Goddard, in charge of the Research Department of Vineland, is engaged in tracing the records of the members of a single family, which promises to rival, if not actually surpass, the record of the notorious Jukes family.



The ancestry of 1146 brothers, sisters and cousins of whom 580 were insane, others criminals or epileptics, and the remainder normal, has been traced back through seven generations to the parent stock—a sane father and a feeble-minded mother.

This family being studied by Dr. Goddard, shows even an higher percentage of feeble-minded members. Three years and the labor of seven trained investigators has already been spent in compiling and classifying information about this family. Another year will elapse before the record of every member of the family is traced and the work completed, but the facts gathered so far enable Dr. Goddard to declare the case of the

Jukes' is not an isolated one, as many have believed, but a typical one. In fact, every state in the union will furnish several families, he declares.

For obvious reasons it is impossible to give the name of the family; but in 1772, a young man of a proud New Jersey family wronged a feeble-minded girl who lived near his home. Then he went his way, married a girl of fine family, reared children and died highly respected in 1837. But the feeble-minded girl gave birth to a son of feeble-mind, and his son became the father of thirteen children, seven of whom were idiots. One of the feeble-minded sons married a feeble-minded woman, and all their children were idiots. In the next generation, one of their feeble-minded sons (to follow only one branch of the family) fell in love with a feeble-minded woman. No one prevented them from marrying. They brought eleven children into the world, and one of their idiot daughters bore eleven children. And the last in the direct line of horrors is a girl of 14 in the training school at Vineland, who has a mind of a child of 2.

This, mind you, is tracing only one member of the family in each generation. That one youth who wronged that feeble-minded girl, more than a century ago, became the ancestor, through her, of 1,146 human beings.

Dr. Goddard's assistants have investigated the records of nearly every one of the descendants, only to discover that 580 of them, or more than half, were feeble-minded; many of them with criminal records. Among the others were numerous epileptics, showing conclusively, the terrible consequences of that unfortunate union. Dr. Goddard's assistants have also traced nearly a thousand of the same young man's legitimate descendants, the result of his union with a normal woman. Not a single case of feeble-mindedness has been found among them.

Professor Poellman, of Bonn University, in his investigations of descendants of a female confirmed drunkard, who died early in the nineteenth century, traced her descendants through six generations, and found that they consisted of some 800 persons. Of these, 107 were of illegitimate birth. One hundred and two were professional beggars, sixty-four were inmates of almshouses. One hundred and eighty-one were prostitutes. Seventy-six were convicted of serious crimes, and seven were convicted of murder. The total cost to the state for caring for this woman and her pauper children, and punishing her progeny, was reckoned at \$1,206,000.

Do these cases cited answer the opponents of sterilization? Do the histories prove the idea of natural sterilization to be true? If the wayward sons of the old Dutch settler had been sterilized, would the journals of criminology and jurisprudence now contain historical sketches of the misdoings of some branch of this famous family?

If the illicit union of the scion of the New Jersey family and the feeble-minded girl had not taken place would Dr. Goddard and his assistants now be compiling statistical data at enormous expense? Is it not probable that if the laws of the Austrian monk, Gregor Mendel, had been adopted and put into practice during the past half century, our hos-

pitals would not be receiving children and grandchildren of former patients?

WHAT'S THE ANSWER

During the past few years conditions have improved in Illinois, whereby the state's dependents are better cared for; the institutions are better managed, and the personnel of the medical staffs have been improved.

We have swallowed Kraepelin, body and soul, provided you admit of the latter. We are delving into the mysteries of Freud and Jung; we are lauding the use of water as an aid in quieting the more excited patients and cutting short their attacks; but, notwithstanding all this, the admission of new patients is not decreasing. The institutions are overcrowded. We are looking forward to the erection of a new hospital to care for the cases bound to come.

With all this staring us in the face, and knowing how little is, after all, being done to ward it off, I close by asking:

"What are you going to do about it?"

INFANT FEEDING *

W. D. CHAPMAN, M.D.

SILVIS, ILL.

The idea of race suicide is one that is gruesome in the extreme. If there were to be no future generations to work for, the zest of the world's work would diminish immensely. With some of the older countries held before us as horrible examples of the wages of wrong living, we are reminded that now and all the time it is necessary that we neglect no measures by which our citizens may be upbuilt in strength or given power to resist disease.

The causes operating for race suicide are two, sterility and waste: the preventives, procreation and conservation. The first of these preventives we will not discuss for the present, devoting our attention to the policy of conservation.

To attain our highest efficiency those to be conserved should be caught young on the principle of the somewhat Irish statement concerning the relative values of birds in hand and in bushes.

The feeding of infants is natural. Eve fed boys without being told. As she was uninfluenced by her son's grandmother and did not consult the pamphlets of the Feed Fad Baby Food Company it is safe to assume that, once she had learned her power of stilling cries, every wail brought into service her ever ready pacifier. Of course the digestion of her first-born was ruined. He developed a mean disposition which led him to a bad ending.

The feeding of infants must also be oftentimes artificial, and it is in this field that the pediatricist and the general practitioner have been

* Read at the meeting of the Rock Island County Society, Feb. 13, 1912.

enabled within the past few years to take a more active and a much more successful result-getting part than ever before.

The causes for artificial feeding are several and are too far-reaching for present discussion. The object remains the same always: to conserve life and health. The method varies with the ages: while the principle of the method in vogue remains precisely the same as when a wet-nurse was hunted for Moses. Fortunate Moses was unwittingly returned to his home breast, thus acquiring immeasurable advantage over our latter day hungry ones. That instance is probably the only one recorded in which the principle, imitation of mother's supply, was carried out in absolute perfection. Our efforts forever after have been to attain the highest possible degree of perfection and our hopes of a perfect score must still remain nil.

For discussion we limit the term infancy to include merely the period of time for which the Lord has prescribed an exclusive milk diet for the sons of men. The child's needs during this period being limited to three things, the importance of each is pronounced, and of greatest importance seems food, in that both sleep and exercise are directly and proportionately dependent upon its character and quality.

The premature failure or withdrawel of mother's milk, I regard as a great calamity. The word "calamity" in this application is not original with me and I have endeavored to find a substitute, but without success, for there is no word so expressive of the emphasis I desire to place. Calamity it is! And yet it has become so common that we look upon it with equanimity.

I believe there is no single problem so frequently confronted by the general practitioner as this of infantile nutrition in health and disease. That is why I choose to agitate it here. Figure mentally: of the infants you see, how many do you subject to some dietary correction, temporary or permanent? My own percentage must be above ninety. Successful feeding in disease or in health depends on the physical vitality and digestive vigor of the child at the beginning and on the qualities of the substitute food selected. Our job is to prevent well-intentioned mothers wasting or deranging, through ignorance or ill-advice, whatever living power the child may possess. We are no longer satisfied that the child merely live through the first twelve months. He must live and enjoy it and possess resisting power to disease and an unimpaired digestive apparatus. Failing in one of these, we should feel that we have missed our aim. The summer mortality lists among first and second year babies are appallingly high and the majority of these deaths I consider due to dietetic errors of the first year which result directly in acute, subacute, or chronic digestive derangements which lower bodily vigor to a point where even a slight infection may overcome the resisting power. These lists can be reduced by probably one-half and the practitioner who tries will find a gratified bunch of average American mothers educated within the past ten years by public instruction, "Save the Baby" movements, and current periodicals to a point where they're willing and anxious to co-operate. The thing can be managed now with an accuracy and improved result which

were recognized as impossible in practice when Bryan began to run for President.

It is probable that the first child deprived of mother nourishment was turned to a neighbor to wet-nurse. Shortly afterward I suspect someone found no wet-nurse at hand and turned in desperation to the milk of whatever mammal he had in stock. Each met with greater or lesser success and an argument arose which still echoes. Under present conditions, except in extreme cases of mal-nutrition or other urgency, I unqualifiedly disapprove the wet-nurse. After eliminating questions of disease and fitness, her moral obligation to her own offspring arises as an obstacle. When used she should be released at the earliest convenience.

When we descend to the milk of other mammalia we open into a discussion of relative fitnesses. Cow's milk being the only kind available practically, we are saved, by elimination, much mental work. Cow's milk seems to agree with calves but no one wants his baby changed to a calf, even if 'twere possible. Mohammed found it easier to move himself than the mountain, likewise we find it easier to change the milk to fit the baby. The oldest and simplest attempt at fitting was made when someone said: "The baby's weaker than that calf; let's weaken the milk." The weakening was easily accomplished with water and simple dilution was born. Simple dilution was a credit to his parentage: he's still in vogue and has a good value. In dilutions ranging from three or four parts water and one of milk, up to three parts milk and one of water, gauged approximately to the different stages of infantile evolution, this method has stood through generations with greater or lesser success. These dilutions are usually sweetened: probably because some mother's child refused to take it without. The advantages for present day use are apparent and are real. Simplicity stands first; mothers with no education, or even fathers, can mix milk and water in stated quantities; foreign-speaking peoples to whom more detailed instruction is impossible, can be initiated at once into the technique of simple dilution. Efficiency, if absolute, would stand first as an advantage; its variability reduces it to second place. For a robust infant of hardy digestion every requisite may be accomplished; the system performing extra work on some ingredient without being sufficiently overworked to make the method noticeably detrimental. Fortunately, among these peoples digestions are hardier and nervous systems more stable. The success here is likely to be good and when the majority of our people lived regular, more or less phlegmatic, outdoor lives productive of strong digestive powers and not conducive to acute infections, the method was successful to a satisfactory degree. The disadvantages increase progressively with urban living and rise in the scale of civilization. The causes are varied and deep but the fact remains flat that here we find indigestions and nerve-instabilities in ever increasing proportions. More and more frequently the babies failed to thrive. Parents took it tragically and added things to the grub list. Added anything that seemed to contain nourishment: everything, from arrowroot starch to eggs via sugars and cocoa. Some of these seemed to help; other kids died as the result of treatment. Some of these

haphazard formulas still exist and are covered by patents. Physicians took it more philosophically and sat down to figure the answer. The principal fault wasn't hard to find: he occupied the entire field: and the analytical chemist was called in to dislodge him, while the physician confessed that he had used simple dilution empirically and with only the smallest bit of knowledge concerning the nutritive elements he was feeding in. The chemist returned two analyses—average woman's milk and average cow's milk:

	Woman's Milk per cent.	Cow's Milk per cent.
Fats	4.0	4.0
Proteids	1.5	3.5
Sugar	7.0	4.5
Salts .....	.2	.7
Water	87.3	87.3

The physician saw his job at a glance: "If I can reduce the second figures to equal the first I can nourish the average kid without waste; I've been wasting energy." He felt solid ground under his feet, grabbed a pencil, and called for the swaddling clothes of percentage feeding. In a little while this thing was born. Its evolution was accomplished by joining the analyst's figures with simple dilution. Dilute cow's milk by half: the proteid resulting (1.7 per cent.) becomes somewhere near right (1.5 per cent.): but we've ruined our fats. The infant can digest the proteid content but he hasn't fat enough for nutrition and warmth. We need exactly the fat that's in the other half of that milk (2 per cent.). We add it in this fashion: assume that total of milk and water is twenty ounces. The problem then is to find 2 per cent. of twenty ounces and add it in fat. One per cent. of twenty is one one hundredth of twenty, or 0.2 ounces. Multiplying by 2 we get 0.4 ounces, or 3.2 drams. Now if our fat was undiluted we would add that amount, but for practical use this is unavailable. Cream is our nearest approach. Here we turn to the ordinary centrifugal cream sold by dairymen. This is 20 per cent. (1/5) fat so we add 5 times 3.2 drams or 16 drams and the fat percentage equals that of woman's milk. Now that 16 drams of cream contains equally as much proteid as any other milk and it is therefore necessary in practice to correspondingly lessen the whole milk. Our prescription then for mother's use would read:

• Fresh whole milkHalf pint
Dairy cream.....Four tablespoonfuls
Well waterHalf pint, plus 4 tablespoonfuls

There is nothing further involved in percentage feeding. The rudiments are simple: One comparative chart. The method is easy—simple seventh grade arithmetic. Time consumed in preparing prescription, two to five minutes; accuracy, absolute; waste of child energy, *nil*.

The salts in milk become near enough correct by simple dilution to be rendered negligible. Excess water is excreted through the salivary and sweat glands, lungs, kidneys, bowels, etc., as in all artificial feeding. Sugar is figured same as fat. Dilution one-half reduces it to 2.2 per

cent., leaving us approximately 5 per cent. to add. A short cut to that is: Number of drams in total mixture, multiplied by added percentage desired, gives the number of drams of sugar necessary, e. g., 20 ounces, total mixture, equals 160 drams; 160 times .05 equals 8, the number of drams of sugar required. To reduce drams to household measurements we weigh a tablespoonful of milk sugar and find that, rounded full, it balances at 6 drams; while a teaspoonful, rounded, equals 2 drams. Here we would add to our prescription: Milk sugar, one tablespoonful and one teaspoonful. These measurements are of course, constant. Once weighed and the appearance of a spoonful fixed in mind, this becomes the handiest way to deal in sugar. For the rest of it: spoonfuls, teacupfuls, pints, etc., are easily convenient, but at the present time many mothers are able and would prefer to measure in drams and ounces. The market is flooded with nursing bottles marked in ounces, and the average family can afford a pint graduate.

The frills of percentage feeding develop themselves unconsciously and without consumption of time.

The most used milks are: whole milk, which contains 4 per cent. fat; one-half top milk, which contains 7 per cent. fat; one-third top milk, which contains 10 per cent. fat; one-fourth top milk, which contains 12 per cent. fat. These fractions are best obtained by six hours' gravity action and siphoning off the unwanted amount from the bottom with a piece of rubber tubing. These and the few other necessary figures need not be imposed on an overworked memory. A single sheet of paper pasted in a text-book or pocket memorandum book is better economy.

The advantages of percentage feeding may be stated in the one word, "accuracy." The difficulties of application constitute the main disadvantages. Among many races and classes the method is impracticable because of ignorance, prejudice, etc. In some cities, notably New York, there are milk dispensaries where percentage milk may be bought each day, put up by chemists and pharmacists in accordance with physicians' prescriptions. This is unqualifiedly good but is of necessarily limited scope. For practical general use a combination of simple dilution and percentage methods is perfectly practicable among American middle and better classes. The mothers are ripe through education and are anxious for us to give them the detailed instructions. They are able to follow intelligently and will be the saving of numberless lives yearly and the conserving of unaccountable health energies.

When simple dilution is productive of perfect satisfaction it is well to leave the job in the hands of the mother and not arouse her anxiety. We practitioners, however, owe to our patrons some instruction in what constitutes a satisfactory feeding. Constipation continued for more than two or three days demands more thought than is represented by a teaspoonful of castor oil. It has a cause, always, and this cause lies most frequently in the food itself. The mother would relieve it if she could; she knows chronic constipation is harmful. Suppose, for example, she is a young woman with a grandmother who tells her: "One of my children was just that way and we tried everything and the doctors did no better

than we did; you will just have to let it go." Somebody should contradict that grandmother. Should say: "That can be relieved without the least inconvenience to yourself or to the child. The milk is all right except in one particular, which can be changed by simply knowing how. Cathartics are harmful." No one will say that unless it is the physician himself. The saying of it is not self-exploitation; it is the discharge of an obligation which we assumed the first moment that mother and infant entered our consulting room. Fifteen minutes' conversation with the average mother at any time when she first consults us will fix in her mind the fact that we are able to help her. Constipation, diarrhea, white stools, mucous stools, foamy or curdy or soapy stools, belching, regurgitation of food, chronically sour stomach, failure to gain, loss of weight, all are wrong, and are harmful if continued. Every one of them can be relieved without medicine promptly by correct diagnosis and percentage change of the faulty ingredient, assuming only that the malcondition is due to the food ingested, which assumption is true in not quite 100 per cent. of cases.

Cow's milk is our best substitute for mother's milk and it should never be discarded in the difficult cases without seeing that it has a fair trial, which means correction of details and changes of single ingredients when indicated, without disturbing the main body. You men who drive autos do not discard a perfectly good machine when you experience a blowout. You set a tire. And that change is made through correct diagnosis and work directed at the one part, the remainder being left untampered.

Were this all we might, with reason, hope to occasionally attain a perfect score, turning out a perfectly good yearling of a quality fully up to the breast-fed class. In this hope, though, the chemist who aided in the beginning handed us a rough one by continuing his investigations to find that the proteid of cow's milk differs from the proteid of woman's milk, the former containing more caseinogen (3 per cent.) than lactalbumin (0.5 per cent.), while in woman's milk the lactalbumin is in excess. This difference results in the proteid of cow's milk being slower of digestion by reason of the hard, lumpy curds which are formed in place of the light, flocculent precipitate of woman's milk undergoing digestion. In the creams the difference is well-defined, but of much less importance to digestion, the fat globules of cow's milk being much larger and more individual than the minute globules found in the milk Cain used. The sugar furnished in the dairy product is excellent so far as it goes. We supplement it with either cane or milk sugar. The latter is theoretically the better and many times is much better practically. Many other times, however, cane sugar seems to answer perfectly and I sometimes do not object to its use.

This comparison would indicate that in practice most of our troubles would be met in the proteid content and this, in fact, is the case. Because of the greater difficulty of digestion, I invariably start a young infant with a proteid percentage much lower than that of average woman's

milk, working up from there to the point of tolerance, stools being the principal indicator.

I repeat: In the many instances where simple dilution under the mother's supervision succeeds, do not butt in. Don Quixote went around fixing things for people and did not do well. But in the cases where they meet trouble and are tempted to add things, make changes blindly, or resort to prepared foods, we have in our comparative chart and knowledge of arithmetic, a most potent weapon for good. I feel that I may say there is a cow's milk mixture fitted for every baby. Our job is to unearth it. Holt liberally allows 10 per cent. as the number of infants who cannot be fed artificially. These, he says, demand the wet-nurse for the greater or lesser time, and in this 10 per cent. he includes only the infants prematurely born and those of exceptionally weak digestion who are wasted and in desperate condition. In these cases, with no wet-nurse at hand, we can withdraw milk mixtures for a few days in favor of albumin water. White of one egg, 11 ounces of water, sweeten to 5 per cent. (approximately one tablespoonful). This we increase gradually until it becomes a milk mixture, using for first increase a cream of high fat percentage, thus increasing the proteid as slowly as may be while pushing the fat to digestive tolerance.

After the first month mother's milk is only slightly variable throughout lactation, sugar being almost constant and proteid the most variable, although its changes are slight. This fact should be borne in mind in our imitative efforts. There remain two further differences between human and bovine milks: woman's milk is alkaline or neutral in reaction; cow's milk acid or neutral. This acidity is corrected by alkaline additions calculated to delay the coagulation of casein. Lime water has been used from time long past, but possesses no advantages and some disadvantages as compared with soda. Sodium bicarbonate is adequate, in proportion of 1 grain to each ounce of milk in the mixture. Lately there is a fad for using sodium citrate, same strength but usually used, I think, in solutions prescribed for druggists' dispensing. This is good, but I am not sure it has any advantage over the bicarbonate, and personally I use the latter because of its greater simplicity. Every household being already acquainted with "baking soda," there is one less thing to teach them.

The remaining principal variance of the two milks consists of the fact that, while mother's milk is normally sterile, the bovine product never fails to carry bacteria in varying numbers. Most of the germs are introduced and developed after the milk leaves the cow. Many are harmless and some are harmful. Their total exclusion is desirable, but, for the present, is idealistic. This problem is to be handled by education and supervision by dairymen and retailers. Of the specific bacteria charged with harmful influence, probably the bacillus of tuberculosis has come in for more discussion and money expenditure and legislation than any other. I decline here to enter into this discussion beyond expressing the opinion that cities which have, by ordinance, forced all herds supplying city milk to be subjected to the tuberculin test have worked a hard-

ship upon their citizens by forcing up the cost of milk production and consequently the retail price, and have given no adequate return in the form of health insurance. The tuberculin test may result negatively in a tuberculous animal by reason of a tuberculin injection given before the appearance of the official inspector.

I think it well for infant feeding to exclude the milk of Jerseys because of their greater susceptibility to disease, tuberculosis included. Of other milks, if there is any preference probably it is in favor of the Holstein breed.

In the selection of milk five things are important:—

1. The milk must be fresh, less than 12 hours old, if possible.
2. The supply animals must be in good health.
3. Herd milk is preferable to single supply on account of lessened likelihood to sudden change. Troublesome or even severe indigestions are frequently induced in infants by so physiologic a thing as bulling in the supply animal, when one cow alone is depended upon. There are other sicknesses of even greater importance.

4. The milk must be clean. This is to be encouraged by education and adequate remuneration of milk handlers.

5. The animals must be nourished by fresh foods, not musty or stale feed or brewery slops or ensilage, in order to preserve constant quality.

Pasteurizing and condensing make "dead foods." I dismiss them with the recommendation that it is better to procure fresh milk. Even in cities it should be made possible to obtain milk for infants' use the same day it is extracted. I am aware of the unsettledness concerning the "deadening" of pasteurization and I believe it is, in some measure, accomplished. Condensed milk will, I believe, always cause rickets if continued long enough. It fails chiefly because of its too low fat percentage and secondarily because of the too high presence of carbohydrates. For short times, with very young infants, or for overland or sea-voyage journeys these preparations have a place.

The market affords some so-called "Infant Foods" designed not by scientists with the idea of fitting bodily needs, but by commercialists with the idea of financial gain. These patented preparations are numberless. The most used, however, may be divided into three general classes:

1. Milk foods: They consist of sweetened, condensed milk; dried, and supplemented with wheat flour only partly dextrinized; and contain much unchanged starch. "Nestlé's" is a well known example.

2. Malted foods: In this class belong "Mellin's" and "Horlick's." They are composed principally of carbohydrates. One of those mentioned contains 80 per cent. of sugar derived from malted wheat and barley flours and existing in the forms of dextrins, dextrose, and maltose, with also a slight addition of cane sugar.

3. Farinaceous foods: which have the audacity to contain as high as 70 per cent. to 80 per cent. of unchanged starch. "Ridge's" is an example that is well known.

All the preparations of all three classes are away short on fats and away long on sugars.

If a mother, after being instructed, insists on nurturing her child with one of these carbohydrate preparations, I recommend that we let her do it on her own responsibility and save ourselves the humiliating defeat which is acknowledged when we so advise her. I believe I am not far wrong in stating ten dollars a month as a cost of one of these foods in the second class, for the consumption of a very average infant. One hundred and twenty dollars for the first year's feeding in a family whose supporter earns seven hundred dollars! The doctor is likely to wait until well into the second year for the collection of his delivery and aftercare bill. One hundred and twenty dollars for a fat baby with soft bones and an incurable indigestion! Could you blame a man for finding a second child unwelcome?

The selection of food having been determined, we encounter the problem of its application. Cooperation of the mother or nurse-in-charge is necessary. This I find best obtained by spending fifteen minutes' time, early in the game, to give her a résumé, suited to her understanding, of the objects and methods, difficulties and rewards to be encountered throughout the proceeding; making it frankly plain that I know no more than she about just what concoction is going to fit her particular child, but that I do know how to read signs of trouble and be led by them to the correct mixture. Usually the woman is ripe for this lecture at her first visit. If she hadn't been in trouble she wouldn't have consulted. There are times when I defer it a few days. Its purpose is to establish the relationship of teacher and pupil, to inspire confidence of ultimate success, and to insure her non-neglect of the details to come later. The difficulties to be surmounted are principally: Ignorance, prejudice, and inability. The prognosis of ignorance is good. Teaching removes it. The prognosis of prejudice is usually good: occasionally bad. The prognosis of inability is fatal.

Fortunately this last is rare. I have never met it.

The principles first and continuously demanded are cleanliness and regularity. Rules for cleanliness are positive and inflexible, stated domineeringly and repeated as often as possible. Each detail is stated separately.

In breast feeding regularity is important. In artificial feeding it is indispensable. Owing to the slower digestion of cow's milk and consequent greater work, the stomach *must* have a period of rest before each ingestion. Regularity applies to both times and amounts. The rules laid down should not be absolute. I state them as rules made to be broken but emphasize that if it is found necessary to break them oftener than three times a week I want to be informed and will change either the rule or the food: usually the food. When a two months old child swallows six ounces of mixture and howls when the empty bottle is taken away, the fault is with the food. Four ounces of a properly balanced food will practically always leave him contented. Six ounces, if persisted in, will probably supply him with an incorrigible stomach dilatation. It's like a woodchopper eating popcorn: the more he eats the more firmly convinced

does he become that he's hungry: the fault lying in excess starch with shortness of fat and proteid.

To make myself clear I cite two cases:

1. Girl; aged 7 weeks; weight at birth eight lbs. ($1\frac{1}{2}$ lb. above the average); breastfed for one month, when milk was supplemented with diluted cow's milk, and after one week of that, breast failure was complete and sweetened cow's milk dilutions depended upon entirely; girl had thrived on the breast; bowel movements at one month of age averaged three daily, for the past two weeks one bowel movement daily has been rare except with the aid of enemata, stools being lumpy, pale, odorous; child fretful when awake and sleeps lightly; worn looking; appetite insatiable; for past seven or ten days has lost weight and increased in fretfulness; present weight 9 lbs., or 1 lb. below that indicated in Holt's table of averages.

Diagnosis: Proteid indigestion, insufficient fat, possibly cane sugar is unsuited.

Treatment: Psychic for mother; conversation aimed to relieve panic, inspire confidence, and prepare for a steady grind of attention to details.

Prescribed ten feedings a day, one every two hours except between 10 p. m. and 7 a. m., when two feedings should be sufficient: three ounces to be taken at a feeding, gradually increasing to four ounces. Any additional feedings necessary to be of sweetened water alone, in as small quantities as may be.

Prescription given:

Whole milk	7 ounces
Ordinary centrifugal cream.....	$4\frac{1}{2}$ ounces
Milk sugar	3 tablespoonfuls
Sodium bicarb.	12 grains
Water	$28\frac{1}{2}$ ounces

The fashioning of that prescription is this:—

I decide arbitrarily that food dosage should contain proteid 1 per cent., fat 2.5 per cent., sugar 7 per cent., precisely as we decide what strychnin dosage to use in a given case. To get this dosage on a farm it would be simpler to use one of the gravity "top milks." Since this woman buys her milk and cream bottled separately, it is simpler to use them. Ten feedings of three ounces each would require thirty ounces of mixture for the day. As there may be waste or the amount of each feeding increased after trial, it is advisable to mix forty ounces. Of this forty ounces, 1 per cent. must be proteid: since the milk and cream used will contain 3.5 per cent. proteid we find ready established the inverse proportion: Amount of milk and cream needed : 40 :: 1 : 3.5.

Multiplying means and extremes for numerator and denominator respectively, we find amount needed to be $11\frac{3}{7}$ ounces which, for simplicity, we call 11.5 ounces; the difference being too slight for reckoning. To find how much of this 11.5 ounces is to be cream and how much whole milk we figure fat percentage. Two and one-half per cent. of forty ounces or 320 drams is required. This process may be shortcut (drams times percentage needed) : $320 \text{ times } .025 \text{ equals } 8$, the number of drams of fat

wanted. Now since only 20 per cent. ($1/5$) of the cream is fat, we multiply that 5 times and find that forty drams or five ounces of cream is required. This would be absolute if cream and skimmed milk were being used, but as our whole milk contains some fat we deduct cream and use 4.5 ounces, thus approximating quite closely our 2.5 per cent. With 4.5 of our 11.5 ounces assigned to cream, there remain 7 ounces to be filled with milk. In this 11.5 ounces there is 4.5 per cent. sugar, which, it is readily seen, becomes about 1 per cent. when the quantity of liquid is increased to forty ounces. This leaves 6 per cent. of milk sugar to be added: then, 320 times .06 equals 19.2, the number of drams of sugar required. This approximates three tablespoonfuls. Sodium bicarbonate, one grain to the ounce of milk (12 grs.), and water enough to make forty ounces (28.5 ounces), complete the prescription. On the third day this girl's bowels moved without the enema: on the fifth day there were three movements and the mother was instructed to use a half ounce less cream and a half ounce more whole milk in the daily mixture. Following this she was not bothered by either constipation or diarrhea. She became contented, sleep was improved and after the first week the weight gain was always steady. The fat and proteid were gradually increased after the first three weeks' use of prescription: the bowel movements being the control evidence after each addition, and milk percentages not being followed for record. At seven months of age she weighed a half pound more than is indicated in the table of averages, instead of one pound below, and now, nearing the finish of the second year, she is plump and seemingly possessed of perfect health and digestion: and she is not bow-legged. This case is cited as typical of a child with good vitality following birth. With infants of less vigor, either inherited tendencies or long-continued food abuse, the problem requires more constant and continued effort; but the results are well worth trying for.

Case 2. Boy, aged 8 weeks: artificially fed for two weeks past; took to bottle kindly and continued to gain weight; general health is apparently good but it is noticed that while some stools are perfectly digested and homogeneous, others occurring same day are likely to be undigested and contain large caseous curds. After receiving reports for three days, two feedings were watched and a varying technic was discovered. An ordinary dairy thermometer was delivered with instructions to warm milk always to between 98 and 100 degrees Fahrenheit, and to wrap the bottle in flannel during feeding. The phenomenon disappeared promptly and no food change was necessary. Many of the previous feedings had been ingested too cold and digestion thereby hindered. Usually the child is a good judge of temperature fitness but care should be taken not to impose upon unusual good nature.

Digestive disorders are the most important in pediatrics. They may be classified under three groupings:

1. Nutritive disorders by alimentation.
2. Nutritive disorders by infection.
3. Nutritive disorders by congenital deformities.

With these last we are not concerned here.

Disorders of alimentation may be due first to improper food; second, to indigestion; and third, to failure of assimilation. We must, then, endeavor to forestall the first by providing proper food even though we descend to details quite analogous to the specific gravity and test proof of gasoline in the art of automobiling. The second and third subclasses we must try to avoid by beginning the proper food early enough that they have not become fixed habits.

The second class: those disorders due to infection, may be subclassed as exogenic and endogenic. Of these the endogenic is the least important and covers merely those cases in which some resident bacillus, colon, etc., starts an activity on its own account. Exogenic infections are of the utmost importance and cover a field extending from the general health of the supply animals and the personal habits of their caretakers, down to the moment of introduction into the stomach, and including grooming, milking, straining, handling, temperature, protection from insects, care of cans and bottles, bottling, delivery; and then again, in the kitchen the handling and care of utensils. Cleanliness is the efficient and only protective agent. To procure this in the dairying and marketing stages our job is to co-operate actively with Health Board control and to educate all concerned every time chance occurs, giving them freely any information likely to be of value, even though we receive no direct financial return for such expert conversation. We owe it to our patrons. In the kitchen, we jointly with the nurse-in-charge, are directly responsible. Detailed technic varies as many times as there are physicians. Cleanliness and inhibition of bacterial growth are the working objects, and instruction must never be haphazard. Whatever technic is decided upon as being best fitted to the intelligence and ability of the particular household, one person should be designated to perform the active work and the thing should be made routine; rules being laid down for each procedure in turn with a definiteness and dogmatism calculated to make that particular nurse feel uncomfortable for half a day, should she break a rule. The success in practice varies. Frequently it is surprisingly good. My own cardinal points of instruction are that no milk ever dries on any utensil; it is to be washed or placed under a running tap before it leaves the hand; that each utensil after a day's use receive a day's sun and air, being boiled before and after the day's use; that dry baking soda be routinely used on everything available. Utensils lending themselves to ready cleansing should be insisted upon; the bottles to be straight sided jars with rounded corners and having the shoulder outside, not inside. The drug store displaying any bottle fitted with a rubber tube connecting bottle and nipple should blush for its choice of stock.

If I have said anything essentially new, it is unintentional. I collate and comment because talk does good and because in this age of brilliant and startling achievements the commonplace, the things of everyday usage, are constantly in danger of being overlooked or of being done mechanically and without their full share of effort. General practitioners daily do things to kids' grub lists. Specialists daily work with conditions which would never have developed had not a poorly superintended

first year of life left its mark of lowered resisting power. When a sick child is presented at a doctor's office the first question is likely to be: "How old is he?" And the second equally probable will be: "Breastfed or bottlefed?" The significance of this question may become dulled by frequent repetition but, traced back to its groundwork, the significance is rather awful in that it admits a handicap against the bottlefed of such moment that it must be considered in the treatment and prognosis of all ailments coming afterward. This handicap is the result quite largely of poorly chosen or poorly performed artificial feeding, and since we have the ability to materially lessen this handicap, few things are of greater importance than that we work it out to its fullest efficiency.

RUSSO REACTION IN TYPHOID FEVER *

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The subject presented in this short paper is, in a way, apropos to the meeting, although we take it the *esprit de corps* has a flavor somewhat incompatible with any that might be aroused in a discussion of typhoid fever. Yet we feel that, while our paper is not over-burdened with new truths about this disease, there is something to be discussed in it, and, although simple, is at the same time of more than passing import; to-wit, the Russo reaction.

During the past fall there was an epidemic of typhoid fever at the Watertown State Hospital. We had some twelve cases; some of these were not under our direct supervision; those cases which are used were and number some eleven. The source of our contamination has not been determined, although the milk, water supply and food stuffs were examined carefully. The possibilities of a typhoid carrier was thought of, but nothing could be proven definitely, although the history of one case is suspicious. The first few cases were either old employes or patients of years residence. The doings of these employees for months prior to the onset has been gone over and each exonerated. The only plausible theory was a possible contamination of the water supply. At one time there was trouble in obtaining a sufficient amount of water and it was necessary to use an old heretofore unused reservoir; cases followed this incident in incubation time, but just how this reservoir became infected is unexplained.

Our treatment of these cases was nothing unusual. There was one death due to a profound toxemia; two cases had hemorrhage, one is living, the other hemorrhage occurred some little time before the death in the fatal case. The course of the cases was in many instances typical; all reacted with one exception to the hydrotherapy; diet was somewhat more liberal than the milk diet. The subject has not to do with the management of the cases, but rather with deductions made in the routine laboratory tests of the same.

* Read by Dr. M. C. Hawley before the Illinois State Hospital Medical Association at Peoria, Ill., Jan. 26, 1912.

The Russo reaction owes its name to the physician that first reported it, namely, M. Russo. This physician, as we learned in Chicago, is a resident of Naples, where he enjoys a local reputation of some note. He published under the heading of the "La Bleumetitene reazione suo valore clinico," in the *Riforma Medica* of 1905, his findings and deductions in the use of this reagent in typhoid fever. Subsequent numbers of this magazine make no reference, and we find nothing further upon it from the pen of Russo himself. In German literature (*Zentralblatt für innere Medizin*, 1905, p. 1100) we find a reference to this test by one Hager in 1905, in which he states that it is more accurate than the diazo, and the color reaction disappears upon heating. Rolleston in the *Medical Press and Circular* speaks favorably of the reaction, particularly its early appearance and greater positives than the diazo. He also reports it in measles. It is strange to note the work of Dr. Von Wilhelm Spate, published in 1908, entitled "Über die Modernen Methoden die Typhus Diagnose in *Weiner Klinische Wochenschrift*, 1908," makes no mention of the Russo reaction, although this work has to do with the subject in an exhaustive manner.

Russo gives the following: "To four or five c.c. of the patient's urine, add four drops of a 1-10 per cent. aqueous methylene-blue (the laboratory methylene-blue), mix well, and examine against the light; a mint or emerald green coloration is positive, whereas any bluish color renders it negative." He reports the reaction to be unaffected by boiling or by the ingestion of drugs such as caffeine, salol, calomel, quinin, etc., and also pointed out that the resumption of the bluish tinge as the patient advanced in the disease was a valuable and favorable prognostic sign. During the past year Drs. Rolph and Nelson have used this test as a routine measure in the Toronto General Hospital in cases of typhoid fever. They claim if it is used early it is a valuable diagnostic procedure; for instance, fifteen cases were examined, all known typhoids, by the agglutination test and blood cultures. In these thirteen gave a positive Russo, eight a negative diazo, and seven a negative Widal; two reacted negative to all tests; of these two one was typically a clinical case with positive blood culture and late Widal, the other was an unusual case. All tests were taken within the first forty-eight hours after admission. They obtained a few positives in tubercular cases, but their findings were invariably negative in other non-typhoid cases; especial attention being given to cases resembling typhoid at the onset, such as influenza, slight septic states and endocarditis; they made no tests in measles or smallpox. One fallibility was found, that the bile in urine produces results so near to emerald tint as to be confusing, leading them to think the result was due to small amounts of bile, but this could not be demonstrated in typhoid cases; however, bile should be first tested for in the urine and if present the urine discarded. The earlier the disease the more typical was the reaction. They concluded the result would be due probably to some rededuction process, the bodies unknown. They also concluded that the returning blue color was of no special prognostic value, as the dangers of typhoid are

accidental usually, and not directly dependent upon the severity of the infection.

The eleven cases to be presented were seven employes and four patients. As this disease occurred in more or less demented patients the tests could not be carried out as early as desired. The employees were rather dilatory in reporting their illness. The following table shows the findings:

Patient	Day of First Russo	Russo	Diazo	Widal	Albumin
1	10th day.	+; gone 41st.	—	+ 10th day.	+
2	7th day.	+; gone 38th.	— 7th; 10th to 14th +	— 7th. + 14th.	+
3	3d day.	+; gone 27th.	+ for 10 days.	+	Trace.
4	3d day.	+	+ for 10 days.	+	—
5	2d day.	+ 30 days.	+ 9 days.	—	—
6	1st or 2d.	Neg. 1st day; + 2d; gone 5 weeks.	— 1st day; + 2d day; gone 10 days.	After week +	+
7	5th.	+ for 12 days.	— always.	10th day.	—
8	6th day.	+ 18 days.	—	2d week Widal.	—
9	4th or 5th day.	+ till death.	+ only till 14th day.	+ 5th day.	+
10	1st day.	+ 34th day.	—	—	—
11	About 7th day.	+	—	2 weeks +	—

With only one exception the Russo reaction was found in the first test: this exception was the case of "6," which did not appear on the first day, but did on the second. In fact the early reaction was said to be one of the commendable features. All the cases were positive and continued so throughout the illness, fluctuating in intensity, sometimes only being a trace and usually bearing a relation in its intensity to the severity of the infection. In a fatal case, "9," the reaction grew more intense toward death. Reaction disappeared with convalescence, or returned with relapses. Nine of the cases were positive Widal, one case was atypical, that of "5," but had a positive diazo as well as a positive Russo. He was stupid, had a few rose spots, and anorexia, furred tongue, slight leukopenia. In his case other pus bearing diazo diseases were excluded. The other case, "10," was the most typical typhoid case clinically and no laboratory tests but the Russo were positive; he had rose spots, diarrhea, characteristic temperature, etc. Five cases gave a negative diazo reaction: aside from these negative findings in one other case the diazo did not appear until after a diagnosis was made upon the Russo. All the diazo, with one exception, disappeared about ten days after it was found. Aside from the two negative Widals, one case being the atypical one with a plus diazo and plus Russo, the other, the typical clinical case, was a positive Russo, one case, "2," gave a negative Widal and diazo, but a positive Russo; later the diazo and Widal occurred. One case, "8," complained of feeling badly, but was at work; diazo was negative, but upon finding positive Russo, she was ordered to bed. Blood showed a positive Widal; her case was mild, but dangerous to herself and others without supervision; without a positive Russo reaction she probably would not have been suspected. Another case, "11," by chance came to the laboratory, gave a his-

tory of a week's illness, back and headache, muscular pain and herpes, but he was at work. He gave a positive Russo, but negative diazo. His blood was found to be positive to the Widal; he had typhoid nine years ago. It is possible he may be a typhoid carrier and a Widal positive all these years, but this is improbable; again he may have had a second mild attack.

The use of drugs in the cases did not seem to influence the reaction. The most routine ones given were calomel, quinin, Dover's and salol. Boiling did not affect the tests; was not influenced by albumin; most cases had albuminuria. The controls numbered scores. In no case was there positive reaction. None of the cases of controls contained bile because there was no reaction. None of the typhoid cases, all positive Russo, contained bile. Cases of tuberculosis did give reaction as well as the diazo; although the tint was not quite the characteristic mint or emerald green tint, yet the reaction was enough to be confusing and one should take tuberculosis in consideration when they have a positive Russo. Cases of pneumonia, surgical fever, and various cases of diarrhea gave invariably negative results. Our cases of diarrhea among the demented were all looked after, and the negative Russo exonerated them, otherwise one could not say definitely these cases were not typhoid. At the time of an hospital epidemic, especially when the diazo does not appear in some cases, and was also characteristic of other diseases, the task of testing blood in several dozen cases was no light task. Barring the accidents of typhoid, the test is of some prognostic import. You certainly cannot tell by the Russo reaction if the patient is going to have a hemorrhage, perforation, etc., but we do have some index of the severity of the infection by the intensity of the reaction.

Three cases, "10," "8" and "7," were all mild, and the reaction from the first was mild and disappeared early. On the other hand, in severe cases the reaction was very strong in the beginning and remained until the end, fading very slowly and fluctuating with the symptoms. In a fatal case it grew in intensity with the increase of the toxemia, although the diazo disappeared.

We feel, inasmuch as the Russo reaction seems to have some merit as deducted from the writings of the few who have gone into the matter, that our results will help to place this among the few diagnostic measures of typhoid fever.

It is true that it is not infallible, neither is the diazo reaction, and writers maintain that it is more reliable than the diazo. The fact that it appears early, before the Widal and sometimes before the diazo, that it is easily done, that it persists for a long time; thus precluding the possibility of overlooking it as is possible in the diazo, which usually goes within ten days to two weeks, commends it.

The objection has been advanced that prolonged boiling of urine will cause the green color to appear when originally the urine was blue, the color in normal urine. This has been found to be true. We have advanced the point that boiling and albumen does not interfere with the reaction; by that is meant boiling sufficient to bring out the albumen and not pro-

longed boiling. This prolonged boiling concentrates the urines, bringing up the per cent. of yellow containing matter of urine, seemingly corroborating the opinion advanced by some, as we have later learned and particularly by Junger in the *Deutsche Med. Wochenschrift*, 1906, that the reaction depends upon the amount of urochrome in urine—over .69 giving positive green.

We wish to thank Dr. Rolph of Toronto for his help in furnishing some of the literature, and also members of the staff of the Watertown Hospital for their cooperation.

LOCAL SURGICAL PROCEDURES IN NON-TUBERCULOUS JOINT DISEASES *

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When I read over the subject assigned to me by the program committee, I answered it by saying that in the overwhelming majority of cases local surgical procedures should not be necessary in non-tuberculous joint diseases.

This general summary I believe is unquestionably true in the cases that come early to a competent physician or surgeon, but unfortunately there are a large number of patients who either do not seek any medical advice until the most favorable period of treatment is past or have gotten into utterly incompetent hands and who show the all too frequent picture of joint disease plus maltreatment. It is in these two classes of cases that local surgical intervention often becomes imperative in order to save as much as possible of the function of the limb.

I believe that in the majority of acute joint affections, if surgical interference is at all necessary it is usually indicated only as a diagnostic procedure, and in entering a joint for this purpose three points should never be forgotten: (1) The most scrupulous asepsis must be observed even if pus is found; (2) the puncture or aspiration should be done very carefully and gently and, finally, only so much fluid should be withdrawn as may be necessary to make a correct diagnosis. The non-observance of any one of these points has resulted in much unnecessary deformity and considerable loss of life. I have seen more than one relatively harmless gonococcus or staphylococcus joint secondarily infected by a carelessly executed exploratory puncture or unnecessary drainage and thus converted into a very serious affair. The non-observance of the latter two precautions is one of the most frequent causes of ankylosis. The moment joint infection occurs, serum is poured into the joint freely, in order to keep the bearing surface from contact and friction. If the fluid is withdrawn the delicate endothelium is much more apt to become abraded and fibrous ankylosis result. In addition even bony ankylosis may occur if

* Read before the Chicago Medical Society, Wednesday, Jan. 24, 1912.

the endothelium and the cartilage are both injured with the exploring trochar.

In streptococcus infection, mixed infection, rupture of an osteomyelitic focus into a joint under high pus pressure, thorough, early, through and through drainage is, of course, imperative. These are the only acute joint conditions in which I consider surgical intervention justifiable as a rule. I take it, of course, that in this symposium we are not discussing traumatic injuries such as lacerations, gunshot wounds, fractures, etc.

In the milder cases of simple contracture unaccompanied with ankylosis, surgical intervention rarely becomes necessary as these can usually be relieved by simpler orthopedic measures. If the contractures are of the severer type, or if ankyloses have supervened, active surgical procedure should be instituted just as soon as the patient is seen. The measures required are almost innumerable and I can only outline a few general principles in the time at my disposal.

In the more recent cases of contracture without or with only moderate ankylosis, correction of the deformity by force, tenotomy or tendoplasty with or without temporary immobilization, later massage, active and passive motion, are indicated. Just when to do each one of these things depends entirely on the individual case and often requires fine judgment which can usually be acquired only by large experience. In general I would say that tenotomy and tendoplasty should be preferred to too much force. Tendoplasty is preferred to tenotomy when there are many tendons involved, especially if the joint is expected to functionate later, and also if the tendons are in close proximity to important structures such as large blood-vessels or nerves. As an illustration I would never do a subcutaneous tenotomy of the external hamstring tendon because there are a number of reported, and probably a great many more unreported, cases where the peroneal nerve has been cut in this operation. After operations of this kind I firmly believe in complete immobilization until all reaction has subsided. I have never seen any ill results from this while I have seen mischief result from too early active and passive motion.

Severe ankylosis without deformity and severe ankylosis with marked deformity present problems so fundamentally different that we will have to discuss them separately. For convenience we will take the latter class first. In ankylosis plus deformity, with the limb in bad position, an operation which will disable the patient for a considerable time is practically always indicated, and the question arises, Shall we in the particular case before us try to secure a movable joint, or shall we strive for a firm ankylosis in good position? I believe that here the attempt for a movable joint should be made much more frequently than in the ankylosed joint in good position. In the knee, for instance, an arthroplasty seems indicated when the ankylosis is not too extensive or of too long standing. If the changes in the articular end of the bones are very marked, especially if the crucial ligaments have been destroyed in the process, a resection certainly seems preferable, and in the technic of knee resection for severe ankylosed contractural deformity, I wish to call attention to a number of points which have impressed me as being of

great importance. If the deformity is of long standing, is marked and has developed during the growing period, great care must be exercised in not overstretching the nerves and vessels, as the former will result in a paralysis and the latter in gangrene of the leg. To avoid this accident liberal resection of the ends of the femur and tibia are sometimes necessary. In such cases the tendons must usually be lengthened by open tendoplasty rather than by tenotomy, and sometimes in greatly devitalized patients it is best to do the operation in two stages with an interval of a week or ten days. In resection, the bone ends should be carefully cut so that when they come together they will fit snugly with the limb at an angle of 175 degrees. They should now be fastened together firmly with strong chromicized catgut. Next to asepsis the subsequent dressing and splinting of a resected knee is the most important part of the operation and the one most frequently poorly done. I have seen a number of legs lost because of lack of proper care in this regard, and I do not know of many points in surgery that require more skill and patience. Two boards of proper width, length and thickness, properly padded on one side only, should be applied one on each side and then held in place by circular strips of adhesive plaster. A resected knee properly splinted should cause no more discomfort than an interval appendix, and it should be possible to leave the first dressing on for two or three weeks.

In hip ankylosis I have had no personal experience with arthroplasties, having always done a subtrochanteric osteotomy with or without tenotomy in cases where correction of the deformity was not possible by the use of force with or without tenotomy.

In my own practice I have always been able to correct contractural deformities of the elbow by force alone without being compelled to resort to open operations. I have had a number of cases of pure staphylococcus infection, and by following the plan outlined in a former paper, I have always secured a movable joint. In case of marked deformity plus ankylosis, if I were unable to put the limb in good position by the use of force alone, I would certainly attempt the operation so well described by Dr. Murphy and by which he has had a number of excellent results.

In contractures of the fingers without ankylosis following burns, etc., one can usually get surprisingly good results by well planned and skilfully executed plastic operations, but if extreme contractures are complicated by rigid, bony ankylosis with destruction of the joint, we face a much more difficult problem and one which is so difficult of solution that I do not recall a single case in my own experience or in the work of other surgeons whose results I have seen, where the end result justified the operation. For this reason I have in the last ten years always advised the amputation of the offending finger if the deformity was such as to cause it to be seriously in the way or if unsightly.

Toes which cause marked annoyance because of ankylosis plus deformity should be amputated without hesitation. In contracture deformities of the ankle other than club-foot, extensive cutting operations are necessary only in a very small per cent. of the cases. Usually by the aid of one or two strong assistants or the use of the Thomas wrench, Stills'

redresseur or a number of similar devices plus tenotomy of the tendo Achillis, one can place the foot at a little less than a right angle, say 85 degrees. After this is accomplished this position should be maintained by a well-fitting, light, rigid plaster-of-Paris cast for from three to six months. If this position can be secured and maintained it is surprising how this joint will eventually limber up as a rule. Occasionally, however, this desired position cannot be secured without an extensive operation. In that event it is usually best to make a transverse skin incision extending from the tip of one malleolus to the tip of the other across the dorsum of the foot, cutting through the skin, subcutaneous fascia and all the dorsal tendons. If one will tie two pieces of silk around each tendon, then cut between and apply two similar forceps to the two pieces of silk, one can later find the corresponding tendon ends without the slightest difficulty. The necessary amount of bone excision should now be made with chisel or saw, being careful to avoid injuring the posterior tibial vessels and nerve. The bone excision should be in a transverse line, a transverse through-and-through silkworm gut drain should be put in to avoid accumulation of blood and serum with consequent pocket formation, the tendons resutured with fine chromicized catgut, the fascia with fine unchromicized catgut and the skin carefully sutured with horse hair. The extremity is now put up with the ankle at an angle of 85 degrees and on the twelfth to fourteenth day the drain and horse hair stitches are removed and a cast put on over two pairs of stockings. Just as soon as the sensitiveness of the joint disappears, usually in a week or two, the patient will be allowed to walk. In two months later the cast can be removed, and in my experience the result has always been an ideal one.

Personally I have never been called on to treat an ankylosis and contracture of the wrist which did not yield to tendoplasty plus force, but if I met a case which could not be corrected in this way I would pursue a course similar to the one outlined for the ankle, again making the incision transversely across the dorsum, but dressing the arm and hand in a straight line.

We now come to the severe ankyloses with the limb in good position. Here force will not secure the desired results and the question arises, Shall we resort to arthroplasty? In discussing this phase of the subject it will again be better to consider each joint separately as fundamentally different conditions exist in the different types of joint varying with their varying anatomic structure and varying function.

Stiff finger joints with the fingers in good position I have invariably left alone because early in my medical experience I saw several other surgeons more competent than myself get into trouble, including one malpractice suit, because the end result was each time worse than the condition they wished to correct, and I have always been one of those who are just as willing to learn from the successes and failures of others as from my own.

Ankylosis of the shoulder is a serious handicap to the function of the involved extremity, but fortunately it is a condition comparatively easily corrected by a resection. By making a vertical incision over the middle

of the deltoid muscle down through skin, fascia, and then separating the fibers of the deltoid by a Kocher or Hoffa dissector, one easily comes down to the capsule. By freely opening this in the same direction between two volschum forceps the head is exposed. The head can now be quite readily severed from the shaft by cutting through the anatomic neck with a good chain saw. After inserting a few strands of silkworm gut just down into the joint for drainage the capsule is carefully closed with fine unchromicized catgut and the skin with horse hair and a copious dry dressing applied; and after a small pad has been placed in the axilla, the arm is bandaged snugly to the side and the forearm placed in a sling. I have never found it desirable to apply a weight, the weight of the arm always making enough extension. Nor have I found it necessary to insert a fascial flap. All of my patients thus operated on have in the course of a few months been able to do nearly everything they were able to do before the ankylosis occurred, including dressing their own hair, a very excellent test as to the mobility of the shoulder joint.

In the discussion of the treatment of severe ankylosis without deformity of the finger, wrist, ankle and shoulder joint, I do not consider arthroplasties indicated because I believe just as good results can be obtained by simpler methods. In the remaining three joints, namely, knee, hip and elbow, the subject is still a debatable one, and until we have a larger number of accurately reported cases, it must be largely a question for the individual surgeon to decide for himself. Personally I have been rather conservative in the matter because while I have seen a number of very remarkable and highly gratifying results I have seen about an equal number of very unsatisfactory ones. I have seen a number of cases that reminded me most forcibly of the Tin Wood Man in the "Wizard of Oz," and I could scarcely restrain the suggestion that the owner of such a joint should keep the oil can always near at hand. For this reason I have never been willing to deliberately attempt to change a firm ankylosed knee, hip or elbow joint which was in good position to an uncertain condition which might turn out considerably better or much worse. A firmly ankylosed painless knee joint ankylosed at an angle of 175 degrees, for instance, is, in my opinion, greatly to be preferred to a squeaking, wobbly, painful one, more especially if you have to spend time and money to convert the former into the latter. This whole matter calls to my mind the history of the open operation for congenital dislocation of the hip. You will recall the first enthusiasm when Hoffa and Lorenz published and exhibited their first successful cases. It was soon found, however, that while a considerable number of brilliant results were obtained, too large a per cent. of the cases were actually made worse by the operation. Julius Wolff put the whole thing in a nutshell when he said: "Before the open operation all cases of double dislocation of the hips walk like ducks; after the operation many of them walk like lame ducks." Now the question as to whether—and if so, when—arthroplasties are justifiable in cases of ankylosis without marked deformity cannot be answered until we know just what percentage of cases are made worse, what per cent. are not improved and what per cent. are definitely cured;

and I for one am willing to go slow in the matter until such men as Dr. Murphy can give us a detailed report of one or two hundred cases on which to base our conclusions.

DISCUSSION

Dr. Coleman Buford: I have no other than favorable comments to make on the papers read here this evening. They are all very instructive. I shall have time only to refer to the subject dealt with by Dr. Dorland, "The Relation of Pelvic Diseases in Women to Osteo-Arthritic Joints."

We have heard much of the association of tonsils, gall-bladders, appendices and other infected foci associated with rheumatoid arthritis, but we have heard less and read less concerning the association of infected fallopian tubes with these arthritides. Recently such a case came into my hands. The relief following the removal of the infected tube was so prompt that it is almost unbelievable.

The patient was sent to me by one of the most reliable diagnosticians of this city, who believed that the patient was just recovering from an acute attack of peritonitis, probably caused by gall-bladder disease; but I could not convince myself that the gall-bladder was the seat of her trouble, nor could I determine where the seat of her trouble was. The patient was apparently recovering from her recent attack, and I wished if possible to see her in another such illness rather than operate then. She had been running a temperature, had a somewhat rapid pulse and moderately distended abdomen without rigidity when I saw her. Pelvic examination showed a uterus in the normal position; nothing was felt in the left, but in the right iliac fossa there was a suspicious thickening in the region of the broad ligament, which could not be engaged through bimanual examination. I obtained a history of this patient. She had been operated on eight years previously by one of the most eminent gynecologists of Chicago. It was stated that through a suprapubic incision her appendix, both tubes and one ovary had been removed. This information put me somewhat off my guard. The patient stated that she had suffered from muscular rheumatism for four years, and for the last three years had suffered from articular rheumatism. All of the joints of the fingers were enlarged, a typical picture of arthritis deformans with Herberden's nodes. She also told me that her tonsils annoyed her a good deal, and I proposed that they be removed at some future time. Three weeks after the attack, while menstruating, the patient was taken ill with severe abdominal pain, lasting two or three days before I saw her. It was clear that she was suffering from peritonitis, and I decided to explore her abdomen, but it was not yet clear as to the source of her infection. I again found indistinct and remote resistance in the neighborhood of the right tube, but the rigidity over this area was no greater than that of other parts of the abdomen, and remembering the history I had been given, that both tubes had been removed, I decided first to explore the right upper quadrant (the gall-bladder and the common duct). I delivered and carefully inspected the stomach, palpated the spleen, liver and kidneys with negative results. I was so sure an inflammation existed in the abdomen that I now examined the intestines loop by loop, replacing the loops as fast as they were delivered for inspection. After I had passed 4 or 5 feet of the ileum through my hands, I pulled up one loop from the small pelvis, which showed acute and violent inflammation, and knew that this must have laid in the neighborhood of the original source of her trouble. I therefore closed the upper incision, and opened the abdominal suprapubic scar, finding the tube and ovary absent on the left side, but present on the right and filled with bloody fluid, exuding from the fimbria. The tube was greatly swollen, free, not covered by exudate, but every loop of gut lying in the immediate neighborhood of this tube was violently inflamed and covered with lymph exudate. The tube was removed, the ovary not disturbed. The patient made an uneventful recovery, but the interesting point was, that on visiting her the morning following the operation, she remarked that she had taken her rings off for the first time in three years, and that her knuckles were not annoying her. Within three or four days this patient could shut her hands, which she had

not done for three years. She is under exceedingly reliable observation, and her physician reports that she has had no rheumatic trouble since.

Dr. Henry F. Lewis: Dr. Dorland speaks of the congestion of the pelvic joints as being caused by a congestion of the organs of the pelvis during menstruation or as the result of an inflammation. I do not understand how that can take place, since anatomically the blood supply is so different. Congestion of the ribs is as apt to cause disease of the lungs as congestion of the pelvic organs to cause joint trouble, or *vice versa*. The bony thorax covers the lungs the same as the pelvis covers the contained organs. It seems more likely that the disturbances in these joints are the result of a toxemia, such as is manifested in other joints in the body. We know that such a toxemia is present during menstruation and pregnancy.

Dr. Smith: I have a bony ankylosis of the knee-joint. It is the result of an injury received some time ago while horseback riding. As an examiner for a liability insurance company I see many of these joints, and I must confess that of all the neglected cases the arthritides are the worst. It is so common to have chronic arthritis occur as the result of a very minor injury, such as a slight fall or a twist of the joint. These patients go from physician to physician seeking relief. I am convinced that the primary cause of the suffering is due to inefficient treatment from the beginning.

Little has been said of the specific treatment of the ordinary forms of chronic arthritis, those induced by injury especially.

Dr. Ridlon mentioned the mechanical sense. That is a good point. I have seen joints immobilized for five or six weeks with a plaster splint just covering the joint or running down to the ankle, or even a piece of cardboard. That is not sufficient to immobilize, although it is not always necessary in the ordinary case to include the pelvis. The splint should, however, include the foot and go to the perineum. The main thing is prolonged rest of the joint and later passive motion and massage.

Dr. Edward H. Ochsner: In connection with the treatment of painful sacro-iliac joints, I would like to call attention to a method of treatment which I saw at the Charité at New Orleans about five years ago. Dr. Ochsner of that city used adhesive strips about 2 inches wide tightly drawn across the sacrum and extended forward on each side about 3 inches beyond the anterior superior spine of the ilium.

These adhesive strips overlapped about one-third of their width, as do the shingles on a roof, and it is remarkable how quickly they relieve the condition.

I have had an opportunity to use the method four or five times with great benefit to the patient.

Dr. John Ridlon: In speaking of straightening knee-joints and getting after the hamstrings, it is certainly a wiser surgical procedure to cut the hamstrings openly than subcutaneously. Nevertheless, the only case of paralysis of that nerve that I ever saw in my experience was a case where I cut the hamstring openly. If I had not done the open operation I certainly would have thought that I had cut the nerve. The paralysis was complete in three days. It ultimately disappeared. Therefore, if you get paralysis when you do the subcutaneous operation you need not necessarily have cut the nerve, but simply stretched it.

Since Dr. Murphy wrote his first paper on the plastic operation for the relief of an ankylosed joint, I have seen only two results with movable joints. One of the operations was done by Davis of Philadelphia. The patient had a good movable joint, but had to wear a brace because it was altogether too movable. After seeing several of Dr. Murphy's cases in which no useful motion was obtained, I saw one case of knee-joint operation with good function, but I did not see that case before operation. To judge of the result, I want to see the case both before and after the operation. Those are the only two good joints I have seen out of fifteen or more done by Murphy and others. I have yet to be convinced that it is possible to get a good result in knee ankylosis; a result that is functionally useful.

As to the plaster splint referred to by Dr. Smith. If the knee is straight it is not necessary to have the splint go higher than the perineum or lower than the ankle; but if the knee is bent and there is pain and muscular contraction and deformity, a good result can only be had by extending the splint to include the pelvis and the foot.

I know the orthopedists in this country better than anyone else does. I have not seen a slipped sacro-iliac joint or a joint that to me was any different from a normal joint. I have looked for such a joint ever since Goldthwait first read a paper on the subject. I have had roentgenograms made of every case, but have failed to find a slipped sacro-iliac joint, such as Goldthwait and some others have described. Patients will sometimes give a history which would lead one to think that it was a case of slipped sacro-iliac joint. I have had three cases of that kind during the past few days.

First came a woman with painful sacro-iliac joint of four years' duration. She fell some months ago and has had greater disability since that time. The Roentgen-ray picture showed nothing in the hip or sacro-iliac joint. I examined the woman and could not feel any deformity, but she had a stiff lumbar spine. I had a picture made centering around the second lumbar vertebra. It was diseased in two-thirds of its diameter; the cartilage between the first and second vertebrae was completely eroded, and there was disease in the first lumbar.

The next case was a girl of 19, pimply-faced, nervous, with pain in the left sacro-iliac joint. The Roentgen ray showed nothing abnormal. The girl was constipated. I told her doctor to give her some senna tea. I think she will get well.

The third patient was a man with a painful sacro-iliac joint of some standing. He had had a fall recently and had had more trouble ever since. At times he was better and then again he was worse. There was nothing to be seen or felt in his sacro-iliac region. He had one leg $1\frac{1}{2}$ inches longer than the other.

Those are the painful sacro-iliac joints, the slipped, the relaxed joints. The only relaxed sacro-iliac joint I could ever demonstrate was in a woman who bore three children before she was 19 years old, and that joint was well when she got up after two months in bed.

A lady had a painful sacro-iliac joint. She went to Boston. Goldthwait manipulated the leg under anesthesia, and she was as bad afterward as she had been before. She wore a plaster girdle and a canvas girdle. She came to me. I could not find anything in her sacro-iliac joints or spine. Dr. J. C. Webster operated on her, cleaning out her pelvis, and she has not had a pain since.

The whole thing as to these sacro-iliac joints amounts to this: One man treats the patient with a girdle, another with a piece of steel on the back and a pink silk abdominal supporter (it has to be pink; blue or white will not do); another uses a vibrator, all for the same purpose and the result is always the same. They have pain in the back and they get well. But that does not mean that they have had slipped sacro-iliac joints.

I had one case where I believe that I had a slipped sacro-iliac joint. Dr. Porter examined the man and thought he found the same thing. The Roentgen picture showed one joint apparently different from the other. I thought we had proved our case. We had another man make a Roentgen picture, and it was the same as the first. We sent the pictures to Goldthwait and he did not see any evidence of displacement of the sacro-iliac joints in the pictures, but judging from our description he thought that it was a case of slipped sacro-iliac joint.

The man went to him and had his leg manipulated and came back to us with instructions to have the vibrator used. We used it, but had no more pictures made fearing that they would show the condition just as it was before Goldthwait operated on him.

Dr. Dorland (closing the discussion): As far as I know, this is the first complete paper to be published on the subject of the relation of pelvic disease in women to osteo-arthritic joints. While in Philadelphia recently I looked up the subject thoroughly, but found no paper on the topic. What I have given you is the result of as extensive a search of the literature as I could make, covering

everything to be found in any way bearing on the subject; therefore, what I have said must in many points be theoretical. I say this in reply to the remarks of Dr. Lewis. So far as I know the congestive theory is the only one that will apply to all these cases. We certainly cannot apply the toxic theory, as Dr. Lewis suggests, to all the swollen and painful joints present during pregnancy and menstruation. Now, as to Dr. Ridlon's criticism. There is this to be borne in mind, namely, that experience differs with different men in different parts of the country. Thus I was for many years associated with Dr. B. F. Baer, who for a long time absolutely denied that there was such a thing as a "pus-tube," and he ridiculed the men who claimed that there were such things. The lamented Dr. Joseph Price was one of these men. He had a practice in which he saw these things, while Baer never had such cases. Finally he got them. I saw him operate on them, and then he acknowledged the existence of pus-tubes. Although all the authorities and text-books speak of the conditions, I do not know, from my own experience, whether there are sacro-iliac relaxations or not; but I have seen sacro-iliac inflammation. The fact remains, however, that these patients are relieved of their pains by certain treatment, and whether there is a definite relationship existing between pelvic disease and these painful joints must be tested by time and the most careful observation by many men under different conditions. It surely is not safe to conclude that a condition does not exist simply because one man, however large his experience, has not seen it.

THE COMMERCIAL ASPECT OF THE MEDICAL PROFESSION *

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PEORIA, ILL.

There may have been a time when men entered the medical profession for the honor and glory of doing good to the sick and afflicted. We picture that day when doctors were disposed to dress in somber shades, look grave, disguising years by whiskers, for age added to wisdom. He was honored and respected and often underpaid or seldom remunerated for his skill, yet he went on toiling like a messenger of mercy, doing this because of his sorrow for the sick and afflicted. He was hard up, pressed for the necessities of life, while those who chose business or commercial life passed him in dollars and pleasures. Their crops grew and herds multiplied, while the farmer slept. Clerks roll on the industry of selling while the merchant enjoys his vacation. The doctor is a one-man concern, modestly waiting until he is called. His business sleeps when he sleeps. It takes vacations when he goes. He cannot so much as substitute himself without loss. There is no one who can fill his place.

When your business associates outstrip you and the years go rapidly by without an increasing chance to ever be able to retire from practice to enjoy the declining years, you know you could have done better at something else, or possibly a little blarney in the practice would have increased your income. Then it is that honor and glory go glimmering and commercialism comes in.

That we would like to do better, more practice, live better, travel more, makes us restless and anxious to do something.

* Read before the Peoria City Medical Society, March 5, 1912.

The doctor has a knowledge of commercial life, understands the profit of increased sales at a reduction. He is a live wire, believes in being awake, is a willing worker and applies to his profession business rules that make money for the business people. So the doctor tries commercialism.

Advertising seems to be the first axiomatic principle of commercialism. We all believe in advertising. Now to the "ad" writer, my name, business, location, hours, phone number and specialty. There is nothing more, for "honesty is the best policy" and all that I can say looks best in a neat card, and using the commercial method of making each department sustain itself. You will then cut out the advertisement, for who looks at business cards in the daily paper when wishing a doctor. Large half page "ads" have been tried, but do not pay unless exaggerated statements are made. So the method is changed to have frequent mention made connecting your name with baby cases and injuries, at the usual advertising rate.

We must advertise and the most profitable advertising yet discovered is that which we are doing right now. Some of us work the old women as our advance agents. Some join secret orders or the church. Some use automobiles. Some dress catchy. Some look wise and some well, they advertise, but have not been caught. Yes, we all advertise, and we are asking the question, does it pay?

These soliciting agents must be paid and if this department pays a good per cent. they will keep at it. If it requires \$150 to run an automobile one month and does not increase our income that much or more, the same would be abandoned by a good business man unless it was kept as a business "ad," meaning that the owner has so much to do that no less mean would satisfy. No doubt it is a good advertisement and why not try it? So long as you advertise honestly and honorably—advertise. Be a live wire. The best advertisement is good goods sold right. The best patrons are those with whom there have been previous dealings. So it is with us. An intelligent conviction of a patient as to our work, makes for us more work. The question is how to get the ear of the people. Some doctors cannot talk glibly and while they know, cannot impress favorably, or say too much or too little.

I know my best advertisement, learn your best. Like a commercial man prune your "ads," keep account of what pays and what does not. I think we agree that knocking does not pay. So we will no longer be knockers. Like other commercial men, let's get together a little closer and have a perfect understanding about this business of ours. There is so much we can do to increase our income honorably. There is the counter prescribing. Step into a drug store and see the druggist play doctor, diagnosing and prescribing until our business is hurt vastly. The druggist charges the usual rate for filling a prescription and we have received nothing. Many of us are dispensing solely for the reason of getting the refills and are doing so for the reason that the druggist declines to send our patient back. A business understanding would result not only in increasing business for each, but of benefit to the patient.

Why not appoint a committee to meet a like committee of the retail druggists of this city and report to this society. As it is, it is probable that most druggists of this city have violated the laws of this state, for practicing medicine.

Another evil is the favorite prescription that is boasted as a sure cure—like that which is now exploited by various citizens of our city, in direct violation of state law. We know their product has neither worth nor science. Are we doing our duty to permit such conditions to exist, which are detrimental to the victim?

I have had several patients go to one or the other of this class, and without benefit to either of us.

Look over this city and any one of you can recall the name of a dozen or more who are practicing medicine without let or hindrance. Cress, the the chiropractist, Harper, Davis, Bohannon, Henry and others. They defy the law, they get the people. How can they, even if they so desire, give honest work. Not knowing, how can they relieve. They make false promises, and if we desire honest business, let us make an effort to cause honest commercialism to exist.

The statute laws of our state seem plain in its prescribed duties, but if those whose duty it is to enforce the law, do not, then I would suggest a remedy of our own. Appoint a committee with the power to correct false statements, the same to be made public in the press, paid for at the usual advertising rate. When a cure or false claim is made, procure the truth under sworn statement and give it publicity.

Let all of this be done under the name of the society. Make it plain to the people that this class of mendicants cannot, under the law, collect for services rendered, unless they are registered physicians in the county where they practice. I believe that every one of this class could be stopped practicing if I was given the use of the name of this society and money for limited space in the press of our city papers.

The *Chicago Tribune* has taken up the very laudable task of driving out the "loan sharks" of Chicago. If the "doctor sharks" of this place were treated similarly it would be a good work well done.

In no sense is this a selfish motive. We should be the public guardian of sickness and knowing that these are pirates, ignorant of laws of health and disease, it becomes our duty to protect the people. We cannot be charged with selfish motives, for they, as a class, make business for us. They are alarmists, and usually their patients come to us with mind and body poisoned, who probably never would have consulted us had not the quack "ad" picked them up.

As keen business men, we cannot see the wisdom of establishing a free dispensary in this city. It is starting an evil which experience has proved does not pay. There is no doubt that it cheapens the estimation of doctors and is abused by the people. I speak of this for the reason that now is the time to determine will we or will we not encourage this kind of commercialism? Questions of this kind would come up before the respective bodies of wholesale and retail merchants or before a banker's

organization. This is just as important to us and this is our body before which we shall honorably discuss motives relating to our common welfare.

The agitation for a sanitarium for the treatment of tuberculosis has already become a public question. If this is to be constructed by public taxation it would seem proper that the profession of this city and this society, in particular, should be the medical advisers. Possibly a better course to pursue if we are to take over the treatment of this disease would be its prevention. The money and cost of maintenance of a sanatorium, applied systematically and thoroughly on prevention, will cure many more people, do much more good than to have a place to treat these cases after infection. This is certainly the better plan. I would suggest that this society take an active interest in this and that we, through our Board of Health, give to our city milk and meat free from tubercular bacilli. If it can be done it should be no matter what the cost.

It is strange that the office of coroner is not more sought after by members of this society. It is an office more suited to a doctor, and should be held by a doctor.

Politically, we have much to do this fall. We would suggest that our candidates to the house and senate be interviewed by an appointed committee and asked to state their position relative to medical enactments. Two of the representatives now seeking reelection did not support us in the last general assembly. The deplorable condition of defense of medical laws, lack of enforcement against irregular practice and indifference to our desires from the powers that be, should change the political faith and vote of some of us. In our own county we can, with our own vote and those we can get, elect or defeat. As a state society acting together, we can recall the past and do our duty. Look at the record of these men and what they did. Now they need us and if 10,000 doctors in Illinois will vote one or two friends, 30,000 votes will change a plurality of 60,000.

If you do not realize the importance of this then study the drift of the profession. We plead for higher medical education, for protection of the people. We comply with the laws to those who should help us to honor the law. We liberalize shady schools, various isms, until our state becomes the most liberal place for irregulars; a place where a diploma given by irregular schools entitles to as much privilege as yours or mine; a state wherein the ignorant vendor has his office thronged, where the brazen illiterate play their game; a place where graduates of reputable schools must be examined before permission is given to practice, a state where drugless diplomas are given that offer no hindrance to unlimited practice. We have seen this come about and our protest ignored. Now come these political aspirants seeking reelection and it is up to us. We go to the polls unorganized. Take the case of Adams County, this state, wherein the doctors organized and defeated a candidate seeking reelection, and instead, elected one of their own choice. We will get nothing until we go after it. Here is where commercialism is needed. The political question, as it pertains to medicine, demands that we know where these candidates stand on medical questions.

Why should the police surgery of this city be monopolized and be under the control of one man. Unfortunately, we are all taxpayers, then why not a little commercialism be applied until the fairness of this is apparent. Just such things as these, brought before our society, makes this organization worth belonging to. When we report such conditions and deal with them, we will all feel better and have more. We will always have rivalry, sharp competition, and not always get a square deal. Professionally, this would not be, but since we are commercially professional we must expect the trimmings that go with this kind of business. It seems strange that any one would expect to conduct the practice of medicine and not have likes and dislikes, friends and foes. It is so in commercial and social life and why should it not be so in professional life.

Our homes are filled with advertisements from all kinds of cults and isms. Glowing "ads." showing distorted bodies, telling about human errors, which are read and are the source from which most people derive what knowledge they have of themselves. To us, who know better, such promises and misstatements make no impression. However, there was a time when they did, and the greatest surprise of our college days was to learn that these statements are not true. The advertiser is the medical educator of the people, the masses believe themselves to be as the advertiser has represented it. We have permitted this pirate business to go on unmolested, deceiving and misrepresenting, and have modestly refrained from claiming our own. These false statements we permit to go unchallenged. Why not let this society be our medical educator, and let from it the truth be told? There have been read here some most excellent papers of much worth to the people of this city, which they never heard. Irregulars have sown broadcast the news of our shortcomings while we have been unheard, and yet the challenger would flee from the comeback of this society.

Why should not papers of public interest be given to the press? Why should not this society instruct the people regarding public hygiene and sanitation? Why should not quackery be shown up by this organization? Such papers could appear in the press as read before the medical society, not as an individual, for that would be called advertising. Medical needs must be impressed upon the people by intelligently teaching the people what to ask for, and the law-giver what to give. A demand which will never come until we impart this knowledge either by public lecture or printed papers. Those who are opposed realize this power.


New cults have sprung up and flourished, not because they have worth, but because of clamor of public opinion made so by publicity agents; purely commercial and not professional. Professionally, we ask for higher medical education. If we had gone after this in a commercial way, we could have had it.

Many people believe what they see in print, therefore it becomes us as public guardians of medicine that the truth be spoken; that medical knowledge be taught by those who know of what they teach. When seeking knowledge of theology go to the theologian; when of law go to the lawyer and when of medicine go to the doctor.

There are some of us who are wholly commercial, belonging to a professional body. We seek and desire the prestige of professionalism. Hoping that there will be enough doctors remain professional to keep the society alive, while some of us use every device of commercialism to get business. Some of us do not like to be told that this is so, for we do not like to be disturbed in our method of getting business. We know this is a tender subject, one calculated to offend the transgressor. Yet it is for their good this is told, not with malice, but hoping for a better future for your welfare, with prosperity, your help and aid for this society.


Mothers and Fathers of Chicago— Under which Banner

WILL You Fight— ?



The Illinois Legislature,
without experience or technical knowledge,
after superficial inquiry,
says:
"Chicago shall not
protect its children
by enforcing the
TUBERCULIN TESTING
of dairy cows."

Chicago Department of Health—Educational Series No. 94.



The British Royal Commission,
composed of some of the most distinguished experts in the world, after
10 years of careful research
says:
"In the interest of infants and
children, and for the reasonable safeguarding of the
Public Health, the milk
from tuberculous cows must
be excluded from cities."

Katherine
Felix
White.

(From the Bulletin of Chicago Department of Health.)

ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF THE ILLINOIS STATE MEDICAL SOCIETY

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MAY, 1912

THE MEDICAL EDUCATION SITUATION IN CHICAGO

Through the columns of THE JOURNAL our readers have been made aware of a portion of the medical education problems in Chicago, but in order to refresh all minds it may be well to briefly review the entire history of medical education in our metropolis at this time. It may be conveniently divided into three periods.

THE FIRST PERIOD — 1847-1882

For many years up to 1882 the regular schools were represented by Rush College (established in 1847) the oldest, and the Chicago College established in 1859 by Dr. N. S. Davis and his colleagues as a means of giving a systematic graded course of medical education. The Davis school maintained a very high standard for that period and its graduates were usually found to be equipped in a superior manner. It is only the truth to say that for many years the standard of Rush College was not so high, but good work was done and large classes were graduated. The Hahnemann (organized in 1851), and the Bennett Eclectic (organized in 1869) were the irregular schools, neither giving a high grade of instruction, and besides there appeared from time to time outright fraudulent institutions like the Edinburg University, which did not have long or prosperous existence. It will thus be seen that the Chicago

medical colleges during the first period fulfilled a real demand and were as high, if not higher, in standard than those located elsewhere. Low grade school were decried and unsuccessful.

THE SECOND PERIOD — 1882-1891

In 1882 the College of Physicians and Surgeons was organized by ambitious men, many of whom were not connected with the other school and some of whom came from other centers like Milwaukee, Keokuk, St. Joseph and Winnipeg. While it is said the honors of the teaching staff were secured for a price, yet the success of the enterprise was great. A number of brilliant men taught in the new school. Among them were Nicholas Senn, William E. Quine, H. T. Byford, R. H. Babcock, W. S. Christopher, W. A. Pusey, A. J. Ochsner and others. However, there were a number of men of mediocre ability; there was a lack of team work, and Senn, the great star, went over to Rush in 1891 when C. T. Parks died, leaving the school in a precarious condition until an arrangement was made with the University of Illinois in 1896. This college, however, has steadily improved and was ranked by the Carnegie Foundation as one of the three capable schools. Unfortunately its connection with the University was recently severed, but the officers of the school announce that a high standard will be maintained. Probably because of the success of the College of Physicians and Surgeons, a flood of schools followed, introducing the third period.

THE THIRD PERIOD — 1891-1912

The Bennett Eclectic School has disappeared. The Hahnemann School continues and appears to be by no means the worst school in Chicago.

It would take too much of our space to name the half hundred or more schools of all kinds and varieties, night and correspondence, missionary and sectarian, osteopathic and chiropractic, ophthalmic and paupathic, which followed in rapid succession without protest or hindrance from the constituted state authorities or any one else. The climax was reached recently, when a well-known Chicago surgeon advertised in the daily press that he intended opening a medical college, the professorships in which would be sold to anyone who would deliver the money and influence. All of these institutions made a great display on paper. Shrewd politicians guided their movements, churches lent their influence. Free clinics and new hospitals attracted patients for the ambitious professors to work on. The "free" service was often worked so successfully that the proprietors bought city blocks, bonds and farm lands. One ignorant back woods physician of our acquaintance about this time made his debut at a medical school in Chicago as a professor of nervous and mental diseases. Often an ambitious man would fill the same chair in several colleges. Sometimes he would lecture in one good school and at the same time in a low grade school.

A number of years ago the Council of the State Society and this journal began calling attention to the deplorable condition of the medical

college situation, but their voice was as one crying in the wilderness, and there was no echo of approval, but on the contrary many, including the State Board of Health, were crying "Let it alone, let it alone — the laws are such that nothing can be done, and the laws cannot be altered." In the meantime the three old schools had really advanced to a good standard, and this notwithstanding the charge that one or more of them were said to be admitting students from the low grade schools to advanced standing. Finally the whole state was startled in 1910, when the report of the Carnegie Foundation showed that Chicago with fourteen medical schools was the *plague spot* of all the world. It is true the Council on Medical Education of the American Medical Association had paved the way for the Carnegie Foundation report, but for reasons which will hereafter appear its warnings had not been heeded. Time and events which we shall mention later have amply proved the truth of this report.

What a commotion was caused by that report. How the secretary of the State Board of Health viciously attacked Mr. Flexner personally and professionally. If every one does not know this he needs only to refer to the daily press, the Bulletin of the Board, or our files to find out. Was any thanks given to the Carnegie Foundation for this benevolent effort to break up the disgraceful situation, and bring about a reform? Not at all. On the contrary, all the state officers including the governor of the commonwealth himself, pretended to scorn the self-appointed critics who dared to come into the state and hold the mirror before the public.

What was the attitude of the representative organization of the medical profession of Chicago in this crisis? Very much the same as that of the State Board of Health. In fact, it seemed very much as if there was an understanding between these two organizations, by which everything the State Board did was praised, and every move of the Chicago Medical Society in these vital matters was directed by the acting president of the State Board of Health for many years, and an ex-president of the Chicago Medical Society.

Dr. Percy's report at the State Society meeting at Aurora last year, which was but another Flexner report, was fought bitterly by the delegates from the Cook County Medical Society. However, the State Board of Health tacitly acknowledged the truth of the report by its action when after having refused only from 8 to 10 per cent. of its applicants for license for many years, suddenly found in the past eighteen months that from 30 to 50 per cent. of the applicants were unfit.

The governor finally seemed to acknowledge that his Board had something wrong about it when, last November, he called by telegraph for the resignation of five of its members with the promise that the Board would be renovated at once. Finally the matter could not be ignored any longer by the Chicago Medical Society, and in November, 1911, Dr. A. M. Corwin submitted resolutions to the Council of that Society. They were printed in *THE JOURNAL* last December, but we reproduce them here to compare them with the report and resolutions also by Dr. Corwin which were introduced April 9, 1912. The meetings of Dr. Corwin's medical education commission have been numerous. Almost everything ever

charged against medical and educational conditions in Chicago have been acknowledged to be true by the Commission. But the acknowledgment of evils does not seem to have stimulated rapid action. The original membership of the commission of eighteen has been increased until it is as numerous as the professorships in a medical college, and numbers fifty. Subcommittees have been named and questionnaires have been sent broadcast over the city and state, and yet at the end of six months it appears that nothing has been accomplished. With all due deference to the commission, it seems to us that the problems before it are too complicated for a local committee to handle. The experience of the Council on Medical Education of the A. M. A., of which an excellent Chicago man is chairman, seems to show this. We have before commended the commission and hoped that good would result from it, but we are beginning to fear that it will never arrive. The third period is now due to close and

THE FOURTH PERIOD — 1912-19—

when Chicago shall become a real medical center is overdue. This much-to-be-desired period will only begin when the governor appoints a real board of health which has the courage and honesty to make the best use of the laws we now have and the confidence of the people to back them up in asking for any changes which may be needed, and when secured will be used for the betterment of the state and the improvement of medical science.

EXTRACT FROM 1911 REPORT OF THE CARNEGIE FOUNDATION

It is evident also that the state boards of health are taking their duties more seriously. At the time when the Carnegie Foundation brought out its report on medical education in the United States, the city of Chicago was the home of more proprietary medical schools than any other city. That bulletin called attention to the fact that however deficient the laws of Illinois dealing with medical instruction might be, a fair enforcement would go far to remedy the scandalous conditions existing in the city of Chicago. The report pointed out that no vigor had been employed in the efforts to force the Chicago schools to live up to definite entrance requirements and other conditions prescribed by the state law. *The officials of the state board resented this criticism, but it is worth remarking, nevertheless, that more vigorous action on their part, together with the arousing of public opinion, has within a single year resulted in reducing the number of schools in Chicago from fourteen to nine.* There is no question but that a strict enforcement of the preliminary requirements and an insistence upon the laboratory and clinical facilities demanded by the state law will still further reduce this number in the future.

Progress in medical education, in this country, therefore, may be expected in the near future to tend toward a smaller number of medical schools better equipped, to the introduction of teachers who give their whole time to their duties of teaching and research, to an extension of the fruitful relationship between the hospital and the properly equipped medical school, to better laws, and as a precedent to all of these things, the enforcement of such entrance requirements as will open the medical school and the hospital only to those who are fairly fitted to avail themselves of such advantages without injury to the public. In all of these directions progress is being made, although slowly, *with numerous instances of a tendency to relapse to the old regime.* The road to improvement lies in the main in the hands of the medical profession itself, reinforced by an enlightened public opinion.

REPORT OF THE MEDICAL EDUCATION COMMISSION

Dr. Corwin, Chairman: The Chicago Medical Society Commission on Medical Education has been at work and held many sessions since its appointment. Its membership has been increased from the original eighteen to fifty in harmony with the plan that has developed of forming subcommittees, each of which is to go through the several colleges and make its findings and report upon the work done in its own department. This plan has never before been followed by any similar commission as far as we know, and has the following advantages:

1. Specially qualified men are to investigate their own specialty only, in each school instead of having inspectors to report upon all departments of each school.

2. The three men chosen from each faculty gives the teaching staffs of these equal representation and makes possible the services of those actually engaged in pedagogic work. Such experts would be hard to find in sufficient number outside of the colleges. It should be borne in mind that none of these faculty men is especially appointed by his institution.

3. The association of these teachers from the various competing schools for this inspection of work done in their line in the other institutions, must benefit them all by bringing about a better understanding and stimulating each to better future effort.

4. No member of any subcommittee will act during the inspection of his own school in his department.

5. The number of non-faculty men upon the commission more than equals the faculty members, so that an efficient balance is maintained against personal or institutional prejudice and fairness is thereby assured.

6. The relatively large number of men upon the commission enables the formation of subcommittees sufficiently large for accomplishing the work by division of labor.

7. The sworn reports of each subcommittee will be acted upon by the whole committee and the final conclusions recommended as to medical training and medical practice will have the basis of full and definite data, carefully collected.

8. The aim of the commission to collect facts by those of local residence instead of imported talent, makes haste unnecessary and the avoidance of superficial effort more certain.

It is therefore evident that the thorough inspection of the colleges cannot be a matter of days, but of weeks. A schedule of inspection covering equipment, time devoted to the curriculum, its arrangement and relation and the faculty of efficiency of each department has been worked out and will be reported and acted upon by the full commission at its next meeting. This schedule will be a guide to the subcommittees in examining the colleges, rather than a measure of classification by them.

The subcommittee on legislative practice act will send out a questionnaire at an early date, covering many phases of our practice act, to be answered and returned to the committee. This will be a referendum of the opinion of the members of the profession for guidance of the committee in its recommendation. This questionnaire is to be mailed to each of the presidents and secretaries of the component county societies of the regular homeopathic and eclectic associations of the state, to the officers of these associations, to the Council of this and similar societies, to the members of the commission and to the deans of the medical colleges. A copy will be published in the state journal, with a request that any member interested fill it out and send to the committee. The expense of this important work must, of course, be met by our treasury.

The personnel of the commission and of the subcommittees up to date is as follows:

Corwin, Arthur M., Chairman, 15 E. Washington St.

Mitchell, Clifford, Secretary, 140 N. State St.

Albro, M. Z., 1542 W. 47th St.

Amerson, George C., 3201 W. Madison St.

Baum, William L., 31 N. State St.

Black, Robert A., Del Prado Hotel.
Brophy, Truman W., 81 E. Madison St.
Butler, George F., 31 N. State St.
Butler, William J., 7 W. Madison St.
Carlson, Anton, 5228 Greenwood Ave.
Caldwell, C. P., 4427 Michigan Ave.
Croy, C. C., 703 S. Wood St., care of Hering M. Col.
Culbertson, Carey, 108 E. Madison St.
Day, L. A. L., 29 E. Madison St.
Duff, R. R., 2058 W. 20th St.
Faith, Thomas, 31 N. State St.
Fletcher, J. R., 32 N. State St.
Frank, Jacob, 32 N. State St.
Green, George W., 1917 Wilson Ave.
Gehrmann, Adolph, 31 N. State St.
Gillmore, Robert T., 31 N. State St.
Gronnerud, Paul, 31 N. State St.
Harvey, A. M., 33 S. Ashland Blvd.
Herzog, Maximilian, 64 W. Randolph St.
Honberger, F. H., 441 Oakwood Blvd.
Hullhorst, Paul, 6960 N. Ashland Blvd.
Humiston, Charles E., 449 N. Central Ave.
McEwen, Ernest E., 32 N. State St.
McGuigan, Hugh, 5330 Ellis Ave.
Mitchell, Stafford T., 1712 Wilson Ave.
Ochsner, E. H., 2038 Lane Court.
Pennington, J. R., 31 N. State St.
Pollock, William J., 2100 Chicago Ave.
Rankin, Arthur B., care of Loyola University.
Reininger, E. E., 29 E. Madison St.
Robison, John A., 32 N. State St.
Rittenhouse, William E., 31 N. State St.
Salisbury, Jerome H., 31 N. State St.
Santee, Harris E., 2806 Warren Ave.
Seifert, Mathias J., 31 N. State St.
Stein, Otto J., 32 N. State St.
Stowell, James H., 31 N. State St.
Webster, George W., 32 N. State St.
Webster, Ralph W., 8 N. State St.
White, W. S., 22 E. Washington St.
Wilson, W. H., 3129 Rhodes Ave.
Wiener, Alex. C., 32 N. State St.
Zabortsky, J., 31 N. State St.
Zeit, F. Robert, 4016 Vincennes Ave.
Zoethout, W. D., Valparaiso, Ind.

Finally, as the scope of medical education covers both positive and negative factors, the present commission has its hands full with the undergraduate situation, it follows that the problems involved in the study and control of irregular practitioners and commercial agencies that prey upon the public should be handled by a separate committee. The following are resolutions providing for this, and, therefore, submitted as a part of this report (already having been unanimously endorsed by the commission):

WHEREAS, There are numerous medical "quacks," irregular pathists, fake healers, abortionists and dealers in patent nostrums and proprietaries of various names and stripe doing business in Chicago, preying upon the public under the title of "M.D.," doctor or otherwise, negative factors of medical education; and

WHEREAS, Such practitioners and commercial agencies actuated by greed rather than the preservation of public health, are a menace to the people, and tend to degrade the healing art and bring discredit upon the city and community; and

WHEREAS, The organized medical profession, while seeking to elevate itself and better fit its members to serve the public with efficiency and fidelity, should work to guard the people against immoral and selfish individuals who would exploit them for their own ignoble gain; therefore, be it

Resolved, By the Council of the Chicago Medical Society, that intelligent action in this matter should be taken by the profession, and to that end the president of this Society, Dr. Patton, is hereby directed to request a conference of the presidents and secretaries of the Chicago Homeopathic, the Chicago Eclectic, Chicago Medical and the Chicago Dental societies for the purpose of appointing a joint committee of their respective societies, sufficiently large and representative, to thoroughly investigate the number, the character and methods of said irregulars, and particularly their advertisements in the public press and elsewhere; and be it further

Resolved, That such joint committee shall cooperate with the State Board of Health, the Chicago Health Commissioner and the various local, state and national forces working to improve medical education and practice, and after careful study of the situation shall report to the Council and to the similar executive bodies of the allied societies, with recommendations, upon the basis of which united action may be taken by the entire organized profession and its sympathizers.

Dr. Corwin moved the adoption of the report embodying the resolutions Seconded. Carried.

DR. CORWIN'S PREAMBLE AND RESOLUTION*

Dr. Corwin, under the head of new business: I wish to submit the following resolutions:

WHEREAS, Much has been said and written of late, just and unjust, with regard to medical education, medical practice and medical licensure in Illinois; and

WHEREAS, The public of our great state and neighboring states must have a distorted idea of the profession of Illinois because of untruthful, biased and prejudiced statements that have appeared in the public press and in various partisan medical journals; and

WHEREAS, The medical profession of this state, as a whole, is obviously ignorant of the provisions of our present Medical Practice Act as far as the regulation of medical education is concerned; therefore, be it

Resolved, By the Council of the Chicago Medical Society, that in the interests of truth and justice, and to promote the cause of higher education and improve medical practice in Illinois, the situation should be thoroughly, honestly and officially investigated and the findings given due and prompt publicity; and be it

Resolved, That the president of the Chicago Medical Society be, and is hereby, requested to appoint a special commission of representative members of the Chicago Medical Society to be known as the Chicago Medical Society Council Commission on Medical Education, to be convened by the president of the Chicago Medical Society as chairman and member of the committee.

Resolved, That the number composing the commission shall be such as in the judgment of the president shall best meet the requirements.

Resolved, That the chairman shall invite to convene and act with said commission the following representatives: The Legislative Committee of the State Medical Society, The Public Relations Committee of the Chicago Medical Society, the Committee on Medical Education of the Illinois State Society and the State Board of Health.

Resolved, That the object of said Commission, working as far as may be in harmony with the other representatives mentioned, shall be to carefully scrutinize our present medical law and the medical laws of other states and countries, and

* From December, 1911, issue of ILLINOIS MEDICAL JOURNAL.

after adequate study of the whole question of medical education shall draft an adequate law or frame amendments to the present law, if need be, and shall make a full report to the Council, with further recommendations, to the end that organized medicine of this county and state may arouse itself for the good of the profession and the people.

I move the adoption of these resolutions, and that a copy be sent to the editors of the *Illinois Medical Journal* and the *Journal of the American Medical Association* for publication.

Seconded by Dr. Harvey. Carried.

THE REPRESENTATION OF THE CHICAGO MEDICAL SOCIETY AT AURORA

The meeting of the State Medical Society at Aurora last May was, as all who were there will agree, a strenuous occasion. This applies to the sessions of the house of delegates, and more particularly to the first meeting which convened about 8 in the evening and adjourned at midnight. At this time the weather was unusually warm, the delegates were wrought up to a high nervous tension and things were said and done which were never before heard or seen at the annual meetings. A large part of the evening was consumed by the Committee on Credentials, appointed by President Cotton, which labored with the names of the delegates for nearly two hours, and then came in with a report which seated a large number of Chicago delegates, and disfranchised, at least temporarily, the chairmen of the standing committees, seven in number. We understand that the chairman of the credentials committee, a member of the Chicago Medical Society appointed by Dr. Cotton, bluntly told one of these chairmen the next morning that this disfranchisement was decreed so that there might be that many fewer votes for the down state faction. So much for the good faith of one side which has so freely charged THE JOURNAL with trying to stir up unwarranted prejudice against the delegates from Cook County.

The editor in writing up the meeting in the June, 1911, JOURNAL, uttered a query as to whether the Chicago Medical Society was entitled to as many delegates as were seated at the Aurora meeting, and whether the dues of a large number of the members had not been paid for out of the funds of the Chicago Medical Society.

Our statement was based on the following facts taken from official publications and reports received from the Secretary:

1. The membership of the Chicago Medical Society, June 4, 1910, as stated in the *Bulletin* of that date, No. 36, Vol. ix, was: total names on the "poll list," 2,359; of these 299 were delinquent, leaving the net membership in good standing 2,060. This statement was published eleven months before the Aurora meeting.

2. The membership of the same society Dec. 31, 1910, according to the official statement made by Secretary Suker to Councilor Harris, on that date was: total number of members, 2,419. Of these 888 were certified as being in bad standing, leaving 1,531 in good standing. This official statement was submitted nearly five months before the Aurora meeting.

3 The membership of the same society April 29, 1911, as stated in the *Bulletin* of that date, No. 31, Vol. x, was: "roster of Chicago Medical Society," total names 2,400; of these 783 were delinquent, leaving the net membership in good standing 1,617. This statement was published three weeks before the Aurora meeting.

4. The membership of the same society June 10, 1911, as stated in the *Bulletin* of that date, No. 37, Vol. x, was: "roster of Chicago Medical Society," "poll list," total names 2,411; of these 355 were delinquent, leaving the net membership in good standing, 2,056. This statement was published about three weeks after the Aurora meeting. At no time from June 4, 1910, to June 10, 1911, does it appear from these statements that there were 2,195 members in good standing.

Now as to whether dues of delinquent members were taken from the funds of that society. We believe after mature deliberation that no wrong would have been committed against the Chicago Medical Society itself had the dues of delinquent members been advanced by that Society. Other societies in the state have carried delinquent members, and we cannot see that any great wrong was committed by them. But no political advantage could accrue to any down state society by such action. It is only when dues are paid for the purpose of securing political advantage that payment by any other than the member himself becomes a question which demands consideration.

We do not propose to discuss this any further. The occasion has passed and we are sure such another instance is not likely to occur again. We therefore take this opportunity to say that we feel sure that the Trustees did not use Society money to pay dues of the delinquent members as may have been inferred from our editorial of June, 1911.

The Editor certainly had no thought of making any unwarranted imputation against the Trustees of the Chicago Medical Society, and if he inadvertently did this, he is glad to take this occasion to offer his apologies to said Trustees, leaving the above facts on which he based the editorial to the consideration of the members.

NOTE.—Dr. Suker, Secretary, has written three letters upon this subject which should be published. Under date of June 16, 1911: "The state tax paid by the Chicago Medical Society was \$5,487.50; this represented 2,195 members who have paid their dues and are in good standing, and allows the society twenty-nine delegates." Under date of July 11, 1911, occurs the following statement: "The treasurer's books will show that there were 2,195 members in good standing in the Chicago Medical Society, December 21, 1910. This allows us twenty-nine delegates for the 1911 state meeting."

Under date of November 21, 1911: "In answer to your communication of the 14th of November, I beg leave to advise you that the Chicago Medical Society complied with the Constitution of the Illinois State Medical Society in regard to the report in question, and also complied with the Constitution in regard to the payment of the assessment upon which is based the numbers of delegates. I again reiterate that the arrear dues were never paid by the Board of Trustees from any fund whatsoever, at any time, present, past, and henceforth, your insinuation regarding this point must be retracted as requested by the Council communication. If you study the constitution of the Illinois State Medical Society you will find that the Chicago Medical Society complied with every point therein mentioned, and hence was entitled to the representation of twenty-nine delegates at the Aurora meeting. The Secretary, Dr. Weis, called for the report early in January. The State Constitution says that the same should be rendered in April."

THE SIXTY-SECOND ANNUAL MEETING

The Illinois State Medical Society will convene for its sixty-second annual session at Springfield, May 21, at 2 p. m. The sessions will be held in the Y. M. C. A. Building, on Seventh Street between Monroe and Capitol Avenues, and only four hundred feet from the New Leland Hotel, which will be the headquarters. The registration desk and exhibits will be located on the first floor. The careful attention of the visitors is due to the exhibits which will be made by reliable firms only, and will be in themselves a part of the educational attraction of the meeting.

The meeting of the society at Springfield is always an occasion of interest, because it was here that the Society was organized in 1850, and it has convened oftener here than in any other city of the state, except Chicago. The meetings at Springfield have always been well attended, and there is every reason to believe that this meeting will be no exception to the rule.

The address of welcome will be given by the Hon. L. Y. Sherman, who is well known to the entire profession of the state, especially since he has been the chairman of the Committee of the Board of Control of the State Institutions where he has come in contact and familiarized himself with some of the most difficult medical problems. The professional welcome will be given by the President of the Sangamon County Medical Society, Dr. S. E. Munson. The invocation will be given by the Rev. Dr. T. D. Logan, of the First Presbyterian Church (President Lincoln's church), who has the honorable distinction of not "falling for" every medical fake which appeals to the Springfield clergy.

On Wednesday evening the principal entertainment will be given at one of the theaters, to be followed by a reception to the President, a buffet luncheon, band concert and dance in the large ball room at the Leland Hotel. Tickets for this complete entertainment will be one dollar each, all of which and more will be expended for the entertainment of the society members and their guests.

The literary and scientific program will be of exceptional excellence. Dr. S. A. Knopf of New York will deliver the address on medicine Thursday afternoon at 2 p. m., the title being "Some Modern Medico-Sociological Conceptions of the Alcohol, Venereal Diseases, and Tuberculosis Problems." We therefore take occasion to urge every member of the Society to attend and take part in this meeting.

The Illinois Traction System has granted a rate of one and one-third fares from all points on that line, and this gives to 1,000 of our members the opportunity of reaching the meeting at a very cheap rate.

SEHENSWÜRDIGKEITEN IN SPRINGFIELD

Capitol Building.	Concordia College.
Supreme Court Building.	Governor's Mansion.
Armory.	Old State House, now County
Lincoln's Home.	Court House.
Lincoln's Tomb.	Lincoln's Law Office on North
State Fair Grounds.	5th Street.
Camp Lincoln.	Watch Factory.
Illini Country Club.	Shoe Factory.

WHAT THEY SAY IN INDIANA

When we hear and read that trickery, incompetency and politics are responsible for the present bad reputation and inefficiency of the Illinois State Board of Health, we feel like offering thanks for the good fortune which the people of Indiana enjoy in having a state board of health that not only takes the front rank from the standpoint of efficiency and progressiveness, but is and always has been free from that pernicious political activity and trickery which sacrifices all other interests to political preferment or pecuniary gain. It would be a fortunate thing for Illinois if the secretary of that state's board of health could be retired to private life, and THE ILLINOIS MEDICAL JOURNAL and the better element in the Illinois State Medical Association deserve encouragement in the effort to have a house-cleaning in the Illinois State Board of Health.—*Indiana Medical Journal*, Editorial, April 15, 1912.

SPECIAL NOTICE

Owing to the very crowded condition of the scientific program, the opening session of the sixty-second annual meeting of the State Medical Society will be held at 2 p. m., Tuesday, May 21. This will enable the officers to finish the preliminary business on Tuesday afternoon, and begin the scientific work at an early hour Wednesday morning. We call particular attention to this, inasmuch as the State Society has for several years not held a session other than that of the House of Delegates on Tuesday. The fact is the members intending to attend the meetings should arrange to spend three whole days at Springfield at the meeting.

TWENTY DEAD THEORIES AND REMEDIES

1. HUMORALISM.—For centuries it was taken for granted that the character and intellect of men were produced by—were, so to speak, concoctions dependent on—the humors. There were four temperaments: the sanguine, the phlegmatic, the choleric, the melancholic. The word survives in our good humor and bad humor.

2. BRUNONTIANISM.—The doctrine that all diseases are due to excess or lack of stimulus. By Dr. J. Brown, a Scotchman, 1725-1788.

3. BROUSSAISISM.—The opinion that irritability of the mucous membrane of the alimentary canal was a point of primary importance in cases of disease. Taught by F. J. V. Broussais, Frenchman, 1772-1838.

4. PERKINSISM.—A form of metallotherapy and the therapeutic use of metallic tractors. This theory was propagated by a New England Yankee named Perkins, and had a great vogue in the early part of the nineteenth century.

5. MESMERISM, ANIMALISM OR HYPNOTISM.—A system for the cure of diseases, promoted by F. A. Mesmer, Frenchman, 1733-1815.

6. BANTINGISM.—The treatment of corpulency by restricted diet, promoted by an English layman named Banting, in the early years of the nineteenth century.

7. KING'S EVIL.—The theory that the touch of the king (the anointed of the Lord) was a sure cure for scrofulous diseases.

8. WEAPON OINTMENT.—An ointment which was applied to the injured parts and to the weapon which caused the injury.

9. SYMPATHETIC POWDERS.—Composed of sulphate of copper after the crystals had been dissolved and reformed a number of times covering several months, and long supposed to be a sovereign remedy. The powder was applied to the weapon on the theory that its application would heal wounds caused by that weapon.

10. TAR WATER OF BISHOP BERKELY.—A solution of tar water, exploited by the Irish bishop as a sovereign remedy for all diseases. The bishop was born in 1685 and died in 1753; promulgated his medical ideas about 1740.

11. DOWIEISM.—A form of suggestive therapeutic or faith healing, promoted by one Alexander Dowie, who claimed to be reincarnation of the Prophet Elijah.

12. MAD STONE.—A stony substance applied to the wound made by the bite of a dog supposed to have rabies, and believed by many to be curative.

13. BAUNSCHEIDTISM.—Treatment of chronic rheumatism, etc., by acupuncture with a revulsor instrument furnished with many fine needle points which are dipped into an irritant liquid as oil of mustard.

14. KNEIPPISM.—Cure by walking bare-foot in the morning dew, cold baths, etc., practice introduced by Rev. Father Kneipp, a Bavarian priest.

15. PRIESSNITZISM.—A form of water cure introduced by a German peasant named Priessnitz, in the early years of the nineteenth century.

16. THOMSONIANISM.—An empiric system of medical practice, chiefly botanic, founded by S. Thomson, a New England Yankee, 1769-1843.

17. CHRISTOPATHY.—The so-called Christian Science or Eddyism, promulgated by the much married New England lady who received her inspiration from a Yankee faith healer. Mrs. Eddy was for many years prior to her death a name only, the organization being promoted by a coterie of shrewd promoters known as the Christian Science Board of the Mother Church of Boston.

18. HOMEOPATHY.—Promulgated in 1810 by Dr. Samuel Hahnemann, 1755-1843, a physician of Saxony. He graduated at Leipsic and Vienna. While translating Cullen's *Materia Medica* he was struck by the alleged fact that the symptoms produced by quinin were similar to those of the disordered states it was used to cure. He was also dissatisfied with the state of the science of medicine as it then existed. While many of Hahnemann's ideas were highly fantastic they have exercised a great influence on the development of the science of medicine.

19. ECLECTICISM.—A system of medicine which treats diseases by the application of single remedies to known pathologic conditions, without reference to nosology, special attention being given to developing indigenous plant remedies.

20. **OSTEOPATHY.**—A system in which diseases are treated by manipulating the bones and by other manual manipulations intended to restore the alleged deranged mechanism of the body. Osteopathy was an attempt to develop a system of cure out of Swedish massage and English bone-setting. Chiropractic is another name for it.

BULLETIN OF CHAMPAIGN COUNTY MEDICAL SOCIETY

Beginning with Jan. 1, 1912, Champaign County joins the ranks of those counties issuing a monthly bulletin, which brings the benefits of that organization before the profession of that large and prosperous county in the best possible manner. We congratulate the county on the evidence of its enterprise.

TWO ETHICAL AND SEASONABLE THERAPEUTIC AGENTS

The following two preparations are most excellent therapeutic agents and merit careful consideration on the part of the physician. When the conditions indicate their use, it will generally be found advisable to prescribe them as a first choice:

ELIXIR CORYDALIS COMPOSITUM, N. F.—The Compound Elixir of Corydalis (Turkey corn) represents in each average dose (4 c.c., or 1 fluidram), the following: 4 grains each of corydalis and stillingia; xanthoxylum (prickly ash). 2 grains; iris (blue flag), 6 grains, and potassium iodid, 3 grains, in a vehicle of aromatic elixir. Its alcohol content is about 38 per cent.

It will be observed that this elixir contains five drugs, each with alterative properties, and contrary to the general opinion against "shot gun" prescriptions, the activity of each of these drugs is increased and the value of the elixir greatly enhanced through being thus combined.

It is an efficient alterative, of great value in favorably modifying the general morbid processes of certain constitutional diseases. Physicians ought to thoroughly acquaint themselves with this preparation, for it is a remedy par excellence. Its laxative properties, if not sufficient, may be enhanced by the addition of cascara sagrada or podophyllin.

This preparation has a decided action in the third stage of syphilis, in chronic rheumatism, and is distinctly stimulating to the intestinal glands.

The potassium iodid may be increased when this elixir is used as a remedy in tertiary syphilis. The continued use of such a remedy removes all the symptoms in a specific manner, it arrests the progress of the disorder and repairs the existing lesions.

It is as yet impossible to determine the exact pharmacologic action of this compound elixir in either syphilis or chronic rheumatism; the specific action may be on the organisms, if such exist; it may be due to an ion action on metabolism; it may be due to changing the products of the diseased organisms, or by removing the lesions; again all these factors combined may enter into its action.

This elixir is best administered after meals; owing to the fact that it contains potassium iodid it should never be used with either calomel or strychnin, or with alkaloids generally.

LIQUOR MAGNESII CITRATIS, U. S. P.—The solution of citrate of magnesium is one of the most agreeable purgative preparations of the pharmacopeia and is always kept on hand in a fresh state by the pharmacist.

The solution is made by combining 15 gm. of magnesium carbonate with 33 gm. of citric acid, sweetening with 2 fluidounces of syrup of citric acid, which is flavored with tincture of lemon. This solution is diluted to 12 fluidounces, which constitutes a full purgative dose. As a laxative from 4 to 6 fluidounces may be given.

The solution is effervescent, containing considerable carbonic acid gas. If at times a somewhat irritant action is manifested by its use, this may generally be corrected by the addition of 10 minims of tincture of ginger to each full bottle (12 fluidounces).

This saline cathartic is employed as an effective agent in insufficient peristalsis, in which the slow passage of the bowel contents through the intestines, allowing a more complete absorption of fluid than usual, renders the feces hard and dry and difficult to move onward.

It increases the fluidity of the intestinal contents, thus facilitating their expulsion. Such cases of insufficient peristalsis which have become chronic, due to sedentary habits, are greatly benefited by treatment with this official preparation, and more especially when given before any food is taken in the morning.

Intestinal putrefaction is also lessened by its use, not through any antiseptic power, but by reason of its action in removing the putrefying mass. However, it is contra-indicated when there is any inflammation of the gastro-intestinal tract.

Correspondence

PRACTICE ACT

CHICAGO, April 15, 1912.

To the Editor:—The Subcommittee on Medical Legislation of the Chicago Medical Society Council Commission on Medical Education desires the advice and assistance of the medical profession of the state in regard to any desired or needed change in or amendments to the Medical Practice Act, copy of which is enclosed.

This questionnaire is being sent to the following:

1. All members of the Illinois State Board of Health.
2. All members of the Chicago Medical Society Council Commission on Medical Education.
3. All general officers and the Council of the Illinois State Medical Society, section officers and committees, and the State Journal.

4. The presidents and secretaries of the County Medical Societies of the Illinois State Medical Society.

5. The officers of the Illinois State Homeopathic Medical Society and its branches, and their Medical Journal.

6. The officers of the Illinois State Eclectic Medical Society and its branches, and their Medical Journal.

Please fill out the following questionnaire and return at once.

DR. GEORGE W. WEBSTER, Chairman.

DR. L. C. TAYLOR,

DR. A. M. CORWIN,

DR. CHARLES J. WHALEN,

DR. E. W. RYERSON,

DR. CLIFFORD MITCHELL.

(1) Are you in favor of having the character of the College entrance requirement established by the law as it is at the present time, or determined by the State Board of Health as was the case prior to 1908? (See Sec. 2b.)

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What in your opinion should be the minimum entrance requirement? (See Sec. 2b.) Check those which you approve.

A. High school diploma from approved high school.

B. Certificate of high school education issued by State Superintendent of Public Instruction or like State Officer.

C. One year of college in addition to high school.

D. Two years of College in addition to high school.

E. Arts degree.

(2) Are you in favor of lengthening the medical course to five years in addition to the entrance requirements which you have indicated? (See Sec. 2b.)

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Do you favor any changes in the medical curriculum? If so, what?

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(3) Do you approve of an amendment to the present Medical Practice Act giving the State Board of Health jurisdiction over all licenses issued prior to July 1, 1899, such as it now has over those issued since that date? (See Sec. 6.) If not, why not?

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(4) Do you favor any changes in the law in regard to the education, examination, license or regulation of midwives?

A. Preliminary education.

B. Education in midwifery.

C. Examinations.

D. Licensure.

E. Control.

F. Should the State provide a school of midwifery where such education may be obtained in this State before it is demanded by the State?

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(5) Do you favor any change in the law in regard to reciprocity? If so, what?

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(6) Do you favor any change in the law in regard to "other practitioner" under which Osteopaths are examined and licensed? (See Sec. 2, second paragraph.) If so, what?

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(7) Are you satisfied with the exemptions under Sec. 7 of the Medical Practice Act? If not, what do you suggest?

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Will you support such an amendment as you suggest?

(8) Do you favor the following amendment to Sec. 7? Amendment to Sec. 7:

Provided, that this shall not apply to the use by licensed midwives of such prophylactic as may be recommended by the State Board of Health for the prevention of ophthalmia neonatorum.

Before answering, read carefully the definition of the practice of medicine, Sec. 7, and also that part of Sec. 3 in regard to the use of drugs by midwives.

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(9) Do you favor the issuance of temporary licenses except as at present provided in Sec. 2a? If so, why?

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(10) Do you favor any changes in the method or character of examinations?
If so, what?

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If you favor so-called practical examinations, such as laboratory tests and clinical examinations, how would you provide for the funds for the laboratory equipment and salaries of examiners in the former and clinical material in the latter, bearing in mind that in some single examinations the applicants number 300?

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(11) Do you favor the enactment of a birth and death law with compulsory burial permit feature that will place Illinois in the registration area?

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Should it provide for payment for reports of births?

If so, how much?

(12) Have you any other suggestions to make relative to any amendments or changes in the Medical Practice Act? If so, what?

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Name

Address

Official Title

School of Practice.....

County or District Medical Society.....

Official Program

PROGRAM OF THE SIXTY-SECOND ANNUAL MEETING OF THE ILLINOIS STATE MEDICAL SOCIETY, SPRINGFIELD, MAY 21, 22, 23, 1912

ORDER OF PROCEEDINGS

Registration office main floor, southwest room of the Y. M. C. A. Building, Seventh Street between Monroe Street and Capitol Avenue

FIRST DAY—TUESDAY—AFTERNOON

- 2:00. Call to order in General Session by PRESIDENT W. K. NEWCOMB, in the gymnasium, second floor, Y. M. C. A. Building.
Invocation by REV. E. W. OSBORNE, Bishop of Springfield.
Address of Welcome by HON. L. Y. SHERMAN, President State Board of Administration.
Address of Welcome by S. E. MUNSON, President Sangamon County Medical Society.
Response in behalf of the Society by the President.
Report and announcements of the Committee of Arrangements by CHAIRMAN GEORGE N. KREIDER.
Call to order of Secretary's Conference by H. N. RAFFERTY, Chairman, Robinson.

FIRST DAY—TUESDAY—EVENING

- 6:00. Dinner at Sun Parlors of the Leland Hotel of Section on Eye, Ear, Nose and Throat.
8:00. Call to order of the House of Delegates, second floor, Y. M. C. A. Building, W. K. NEWCOMB, President, Champaign.

SECOND DAY—WEDNESDAY—MORNING

- 8:00. Call to order of Sections One and Two in the Y. M. C. A. Building and the Section on Eye, Ear, Nose and Throat at Leland Hotel, for the reading and discussion of papers on the program.
These sections are to continue without intermission until 6 p. m.

SECOND DAY—WEDNESDAY—EVENING

- 8:00. Vaudeville entertainment at the Majestic Theater to be followed at 10 p. m. by a reception to the President, and Luncheon at the New Leland Hotel sun parlors, followed by a Dance in the large ball room. (Tickets for all entertainments, \$1.)

THIRD DAY—THURSDAY—MORNING

- 8:00. Reconvening of Sections for continuation of Scientific program.

THIRD DAY—THURSDAY—AFTERNOON

2:00. The President's Address—"The Physician Considered from an Economic Standpoint," W. K. NEWCOMB.

Oration in Medicine: "Some Modern Medico-Sociological Conceptions of the Alcohol, Venereal Diseases and Tuberculosis Problems," S. A. KNOFF, New York.

Oration in Surgery: "Essential Factors in the Development of Surgery," DUDLEY P. ALLEN, Cleveland, Ohio.

Reconvening in general session to receive the report of the House of Delegates.

Continuation of the Scientific program until final adjournment.

NOTE: A reception and luncheon for the Ladies will be given at the Country Club.

PROGRAM

Section 1. SUMNER M. MILLER, Chairman, Peoria.

CHARLES A. ELLIOTT, Secretary, Chicago.

Section 2. E. B. OWENS, Chairman, Dixon.

N. M. PERCY, Secretary, Chicago.

1. Illinois Water-Supplies and the Public Health. Edward Barlow, University of Illinois, Champaign.

2. More Recent Work on Bones and Joints. J. B. Murphy, Chicago.

Discussion opened by E. Wyllys Andrews, Chicago.

3. Non-Surgical Recurrences of Malignant Growths after Operation. James B. Herrick, Chicago.

Discussion opened by J. B. Murphy and E. Wyllys Andrews, Chicago.

4. The Abdominal Crisis. A Plea for Its Recognition as a Surgical Entity. Allen B. Kanavel, Chicago.

Discussion opened by M. L. Harris and William Fuller, Chicago.

5. The English National Insurance Bill. W. A. Evans, Chicago.

6. Important Eye Symptoms in Albuminuria of Pregnancy. A. B. Middleton, Pontiac.

Discussion opened by Charles A. E. Lesage, Dixon, and Alfred Murray, Chicago.

7. Report of the Recent Epidemic of Streptococcus Infections in Chicago. Robert B. Preble, Chicago.

Discussion opened by Joseph A. Capps and Leo G. Dwan, Chicago.

8. Fulguration Treatment of Bladder Tumors. Herman Kretschmer, Chicago.

Discussion opened by L. W. Bremerman, Chicago.

9. Notes on Thyrotoxicosis, from a Study of Three Thousand Cases of Goiter. Henry S. Plummer, Rochester, Minn.

10. Anomalies and Malpositions of the Colon, Congenital and Acquired. William R. Cubbins, Chicago.

Discussion by Dr. J. F. Percy, Galesburg, and Carl Beck, Chicago.

11. Anterior Poliomyelitis. J. H. Bacon, Peoria.

Discussion opened by L. H. Mettler.

SYMPOSIUM

Pyloric Stenosis in Infancy, with Report of Cases.

13. Medical Aspect, Frank X. Walls, Chicago; Surgical Aspect, Harry M. Richter, Chicago.

Discussion opened by A. D. Bevan, Frank Churchill, I. A. Abt and C. G. Buford, Chicago.

14. The Vaccine Treatment of Some Unusual Infections, with Report of Illustrative Cases. Edward C. Rosenow, Chicago.

15. A Method of Operation for the Radical Cure of Enteroptosis with Preliminary Report of Cases with One Hundred Per Cent. Cured. Roland Hazen, Paris, Ill.

Discussion opened by Cassius C. Rogers, Chicago, and J. Estill Miller, Quincy.

16. Pulmonary Syphiloma as a Complication in Tuberculosis. W. H. Jamieson, Ottawa.

17. Operative Treatment of Fractures. Herman A. Brennecke, Aurora. Discussion opened by George N. Kreider, Springfield.

18. Diagnosis in Cases of Cranial Trauma. Arthur B. Eustace and Ralph C. Hamill, Chicago.

Discussion opened by Frederic A. Besley and A. E. Halstead, Chicago.

19. Means for the Accurate Determination of Human Internal Parasites. Prof. Henry B. Ward, Urbana.

20. Esophageal Stenosis. Bertram W. Sippy, Chicago.

21. Treatment of Cancer High in the Rectum. Carl B. Davis, Chicago. Discussion opened by A. B. Kanavel, Chicago.

22. Cutaneous Reactions in Infectious Diseases. Ernest E. Irons, Chicago.

23. Indications for Gastro-Enterostomy. Edward S. Murphy, Dixon.

Discussion opened by C. Hugh McKenna, Chicago, and C. U. Collins, Peoria.

24. Brill's Disease, Mild Typhus Fever, in Michael Reese Hospital. Solomon Strouse, Chicago.

25. Operative Relief of "Rigid Dilatation" of the Thorax from Emphysema. E. Wyllys Andrews, Chicago.

Discussion opened by Charles Davison, Chicago.

26. Bronchial Asthma Due to Hypersusceptibility to Eggs. Karl K. Koessler, Chicago.

Discussion opened by A. C. Croftan, Chicago.

27. Three Cases of Hernia, Complicated by Undescended Testicle. W. F. Grinstead, Cairo.

28. Duodenal Ulcer. E. B. Cooley, Danville.

Discussion opened by R. S. McCaughey, Hoopeston.

29. What Modern Bacterial Research Has Done for Genito-Urinary Surgery. Frank G. Lydston, Chicago.

Discussion opened by B. C. Corbus, Chicago.

30. Orthostatic Albuminuria. Everett J. Brown, Decatur.
Discussion opened by S. C. Taylor, Springfield, and A. F. Beifeld, Chicago.
31. What the General Practitioner Should Know Concerning Surgical Diseases of the Kidney. Daniel Eisendrath, Chicago.
Discussion opened by Arthur Dean Bevan, Samuel C. Plummer, Chicago, and E. P. Cook, Mendota.
32. Some Interesting Fatalities. A. Campbell, Clinton.
33. A Study of Fourteen Hundred Wassermann Reactions Lee Connell Gatewood, Chicago.
34. Osteomata and Muscle Degeneration. Lawrence Ryan, Chicago.
35. Movable Kidney: Should We Operate or Should the Patient Wear a Kidney Truss? J. E. Coleman, Canton.
36. Review of Twelve Cases of Pernicious Anemia. Report of Metastatic Focal Infections in the Puerperium. J. H. Stealy, Freeport.
Discussion opened by C. W. Hall, Kewanee, and Herbert Franklin, Spring Valley.
37. The Efficiency of Illinois Municipal Health Departments. George Thomas Palmer, Springfield.

Special Order—Thursday—2 P. M.

President's Address.

Oration in Medicine.

Oration in Surgery.

ORATION IN MEDICINE: "Some Modern Medico-Sociological Conceptions of the Alcohol, Venereal Diseases and Tuberculosis Problems." S. A. KNOFF, New York.

ORATION ON SURGERY: "Essential Factors in the Development of Surgery." DUDLEY P. ALLEN, Cleveland, Ohio.

EYE, EAR, NOSE AND THROAT SECTION, ILLINOIS STATE MEDICAL SOCIETY, MAY 21, 22, 23

PROGRAM

This section has been fully organized and begins its work with a banquet on Tuesday evening, May 21, in the sunparlors of the New Leland Hotel, Springfield. The plan is to organize the section during this dinner. Wednesday will be devoted to the scientific program, and Thursday will be given over to clinics held at St. Johns and Springfield Hospitals. It is anticipated that many specialists in this line will attend the banquet, and of course all members of the profession will be welcomed to the scientific program and the clinics to follow. It is evident that the time has come to recognize the specialists more fully in the work of the State Society, and we believe that this move will be very profitable and popular.

MORNING SESSION, MAY 22, 9 A. M.

1. Combination Operations between General Surgeons and Otolaryngologists. J. C. Beck, Chicago.
2. Hemorrhage as a Cause of Blindness. C. B. Welton, Peoria.

Abst.—Anemia as the primary factor in this form of blindness, with resulting involvement of the optic nerve. Origin of hemorrhages producing blindness. Frequency of this type of amblyopia. Time of its appearance, and significance

of same. Singularity of non-involvement of sight after severe postoperative hemorrhage. Ophthalmoscopic findings in cases examined early. Various field forms presenting. Prognosis as to ultimate vision. Pathology of this form of nerve involvement. Theories as to its production. Time of treatment of importance as to results. The practical importance to general surgeons as to possibility of loss of sight following hemorrhage, after certain abdominal operations. Report of case history.

Discussion opened by W. C. Williams, Peoria.

3. Adenoid Vegetations of the Naso-Pharynx. J. Whitefield Smith, Bloomington.

Abst.—Anatomical features of the nasopharynx, or the respiratory division of the pharynx, commonly called the postnasal space.

Effects on the respiration: Comparison of normal nasal respiration with abnormal breathing due to "adenoids." Purification of the air, its moisture and the modification of its temperature prevented by oral respiration.

Deformity in face and feature; symmetrical retraction of the inframammary region; depression of the ensiform cartilage; other chest deformities. Deglutition performed in a natural manner. In the second period of deglutition the nasopharynx, eustachian tubes and posterior nares must be protected. Normal manner in cases of adenoids. Adenoids interfere with the eustachian tubes (a) by obstructing their orifices; (b) by pressure upon the tubes; (c) by interfering with the normal action of the tubal muscles; (d) by interfering with the ventilation of the tympanum; (e) by exhausting the air from the tympanic cavity.

Treatment of adenoids demands surgical procedures; internal remedies inert; chemical caustics and electrocautery unavailing; local applications not curative in their effects. Preparation of patient demands antiseptic precautions. Necessary position of patient. The anesthetic. Operation procedures. After-treatment: an alkaline antiseptic solution. Danger of latent infection. Sepsis invading the eustachian tubes. Infectious tonsillitis. Dangers of infection from without.

Discussion opened by A. L. Adams, Jacksonville.

4. The Brain and Sinus Complications of Otitis Media. A. H. Andrews, Chicago.
5. Operative Treatment in Empyema of the Maxillary Sinus. C. M. Robertson, Chicago.

Abst.—The various tests for empyema. Review of the methods of treatment. The radical operation of author. Advantages over other methods. After-results as compared with other methods.

Discussion opened by Frank Brawley, Chicago.

6. Hemorrhage as Related to the Eye, Ear, Nose and Throat. A. E. Prince, Springfield.
7. The Traumatic Dislocation of the Crystalline Lens without Rupture of the Eyeball; also the Report of a Case Treated. C. F. Burkhardt, Effingham.

Abst.—Among the points to be emphasized in this paper will be the importance of following a conservative course of treatment until the inflammatory condition has subsided; and to keep the uninjured eye under careful observation, that any indication of sympathetic ophthalmia may be detected and met with radical measures. In the class of cases where the lens matter is broken up into small

sections total absorption of the lens matter may take place as it has in the case to be reported.

Discussion opened by George F. Suker, Chicago.

AFTERNOON, 1:30 P. M.

1. Accidents and Complications Attending or Following the Extraction of Senile Cataract. Casey Wood, Chicago.
2. Prevention of Blindness and Conservation of Vision. Thomas Woodruff, Chicago.

Discussion opened by A. L. Adams, Jacksonville.

3. On the Use of a Conjunctival Flap in Perforated Wounds of the Anterior Globe. George F. Suker, Chicago.

Abst.—The proper employment of a conjunctival flap in selected cases of extensive perforations of the anterior globe often results in the saving of an eye which otherwise should be enucleated. The nature of the wound and the character of the infection are important factors. The details of the technic. Brief case reports.

4. Surgery of the Tonsils. W. L. Ballenger, Chicago.

5. Acute Inflammation of the Thyroid Gland. Otto J. Stein, Chicago.

Abst.—Scant recognition given to the subject. The opportunities of the laryngologist in observing such cases. The symptoms, the varieties, the differential diagnosis. References to some cases.

6. The Treatment of Secondary Divergent Strabismus. H. W. Woodruff, Joliet.

7. Treatment of Corneal Ulcers. C. A. E. Lesage, Dixon.

Abst.—Treatment of corneal ulcers. Necessity of determining whether ulcer is progressive or retrogressive. Removal of cause. Antiseptics. Atropin. Eserin. Dionin, Saemisch's operation. Serums and vaccines. Symptomatic treatment.

ILLINOIS STATE MEDICAL SOCIETY — SECRETARIES' CONFERENCE

PROGRAM

1. The County Secretary. F. F. Garrison, Havana.
2. Some Pleasures of the County Secretary. S. W. Weir, Marshall.
3. The County Society Bulletin. W. W. Watterson, Waukegan.
4. The Relation of the General Practitioner to the Fight against Tuberculosis. O. W. McMichael, Chicago.
5. Medical Organization. George F. Suker, Chicago.

COUNTY AND DISTRICT SOCIETIES

COOK COUNTY

CHICAGO MEDICAL SOCIETY

Regular Meeting, Feb. 7, 1912

The regular meeting of the Chicago Medical Society, held Feb. 7, 1912, was a memorial meeting held in honored memory of our late president, Dr. Alexander Hugh Ferguson.

PROGRAM

FERGUSON MEMORIAL MEETING

1. Music by Phi Rho Sigma Fraternity
2. Undergraduate Life and Early Medical History.....A. McDermid
3. Alexander Hugh Ferguson, The Surgeon*.....A. J. Ochsner
4. Some of the Personal Characteristics of Dr. Alexander Hugh Ferguson*
.....E. F. Wells
5. Music by Phi Rho Sigma Fraternity.

*Text of the Addresses on pages 537 and 543.

Regular Meeting, Feb. 14, 1912

A regular meeting of the Chicago Medical Society was held Feb. 14, 1912, with the president, Dr. J. M. Patton, in the chair. The following papers were read: "Cinematography and Roentgenoscopy of the Abdominal Viscera," M. Reichmann. "The Radiographic Diagnosis of Pyloric and Duodenal Adhesions from Gall-Bladder Infection or Ulcers, Illustrated by Lantern Slides and Cinematographic Reproductions." (By invitation.) Lewis Gregory Cole, New York City. "The Roentgen Ray Examination of the Gastro-Intestinal Tract, with Special Reference to the Fluoroscopic and Stereoscopic Methods." (By invitation.) J. T. Case, Battle Creek, Mich.

DISCUSSION

Dr. P. S. O'Donnell: The subject has been covered so thoroughly that little can be added. The value of Roentgenoscopy has not been generally recognized. Many pathological conditions can be shown clearly by the stereo-radiograph. (Dr. O'Donnell showed a number of plates of fetuses in utero.)

Dr. Emil G. Beck: Dr. Cole has shown us such wonderful work in radiography of the stomach that it should stimulate those who have not done any work in this line to take it up. We are all apt to be skeptical about things of which we know little or nothing, and I was once one of those. However, in the last few years much has been done in radiography of the stomach. Although personally I have done little work in this line, I do claim, however, that I did the pioneer work in stereoscopic work here in 1907, and so far I have published about fifteen papers illustrating the subject.

Dr. Case's stereo-radiographs of the digestive tube are only one phase of stereoscopy in which its usefulness is shown. I have recently shown that in locating foreign bodies this method is far in advance of the single plate. In tuberculosis it is especially important to differentiate between a healed and an active process.

One point the doctor did not bring out, that in a single picture, the farther the subject is away from the plate, the larger the shadow. This is corrected in the stereo-radiograph, as I have shown in my coin experiments, published Jan. 1, 1911, in *Surgery, Gynecology and Obstetrics*.

Dr. Hollis E. Potter: These papers have been very interesting, because they represent the latest work done with the Roentgen ray. The work done by some men has not yet found its way into the literature, and therefore we ought to

congratulate ourselves on having this opportunity of seeing it at first hand. Dr. Cole is an expert in this work. He insists on making a large series of plates, 14 to 24, in these cases. That means a lot of work, and the expenditure of much time and money. If you are looking for a defect in gastrointestinal outlines you must get a constant picture of it, unaffected by change of position. That is why so many plates must be made.

I wish I were quite as sure about making an accurate diagnosis of the probable existence of lesions around the pylorus or duodenum as Dr. Cole is. Dr. Cole is a master of technic. He has worked out the details carefully and the fact that he has arrived at conclusions which differ from those of Holzkecht and others shows that he has followed the subject very closely. The interest aroused in Chicago as the result of his visit undoubtedly will be great. A great deal has been said about gastrointestinal work during the year. Some men expect to see a cancer of the stomach on a single x-ray plate. Of course that is hardly probable, as Dr. Cole has pointed out. We must distinguish between a defect in the stomach wall and a lack of filling of the stomach. That can only be proven by a series of plates. Some use the fluoroscope, but that is dangerous work and really not as effective as a good set of plates. By making a series of plates we are able to construct a moving picture. In that way we get a wonderful idea of things each unit of which is very puzzling when taken alone. We ought to be especially thankful to Dr. Cole for his insistence on thorough and complete examination.

Dr. B. W. Sippy: We are all impressed with what we have seen and heard to-night. I wonder whether Dr. Cole has made any pictures after gastroenterostomies showing the manner in which the stomach empties itself after such an operation. Clinically, we find that it empties itself in the normal time, but no sooner.

What we have heard shows that there are many ways of going at this work. The radiographer is very apt to become overenthusiastic and forget that there are other ways of getting results. He may fail to take advantage of other evidence which may be obtained in other ways. Therefore, in making a diagnosis we must bear that in mind. A great deal will come out of this work. We cannot say just how much, or whether it will be more or less than can be obtained in other ways. Only time will tell.

Dr. Reichmann (closing): As to the value Holzkecht places on peristalsis of the stomach: He wrote a book three years ago in which he claimed that the stomach had only one peristaltic wave. Later he came to the conclusion that this was wrong, and he does not make that claim any more. I do not believe in the cinematography as Dr. Cole does. Often we do not get such a clear picture, and with the fluoroscope we do not need to work so long nor so hard. Making eighteen or twenty pictures is a strain on the patient and on the operator. With the fluoroscope only a few minutes are required to make a proper diagnosis.

Dr. Cole (closing the discussion): I am glad Dr. Potter emphasized the importance of making many plates. I do not think that I made it clear that even when there is definite evidence of a lesion of the stomach in a series of eighteen to twenty-four plates that I do not make the diagnosis on which a surgical operation is to be done. I repeat my examination, making another series of plates, so that no patient is operated on with my consent until the findings in the first series of plates have been verified by a second series.

I am glad Dr. Sippy said what he did. As to his question with regard to the emptying of the stomach, after gastroenterostomy: That is interesting. Last week I made a series of these plates in a case of gastroenterostomy and found that the stomach emptied itself very much more rapidly than it should. It emptied itself in less than two hours.

Another interesting thing was that the part of the stomach beyond the anastomosis failed to have a peristaltic contraction, such as was present in the other part.

Dr. Sippy: What was the lesion?

Dr. Cole: A partial obstruction beyond the pyloric sphincter. I do not know what the lesion was. It was beyond the cap of the duodenum in the first portion. Two glasses of bismuth and buttermilk were given and the stomach emptied itself in two hours. I do not know whether this happens in every case.

Of course, this is only an accessory means of examining. The same is true in tuberculosis, where it is of value as an additional means of physical examination. We are not going to throw away the stethoscope in making a diagnosis of tuberculosis, or disregard physical signs or symptoms; we are simply going to use the Roentgen ray just as we do all these other things. It is the same in gastrointestinal work. Every patient should be examined by every known method and the findings should be checked up with each other and control one the other, because each is valuable.

Regarding Dr. Reichmann's remarks, I simply quoted what Kesselrieder and Rosenthal stated. Holzknacht made his statements after he had examined tens of thousands of plates. He said then that there was only one antrum. It seems strange that he should have changed his opinion now. I cannot help but feel that Kesselrieder and Rosenthal's work had something to do with this change of heart.

Dr. M. M. Mortensen (closing for Dr. Case): I have been very much interested in this program, because I am an internist, and every means of diagnosis is of interest to me. With reference to the persistency of examination, mentioned by Dr. Potter and Dr. Cole, few of us can emphasize that too much. You must make an observation repeatedly before it is a factor in diagnosis. The Roentgenographer is also helped a great deal in his work if, after he has made his diagnosis, he will go to the operating-room and see it confirmed on the table.

Regular Meeting, March 6, 1912

A regular meeting of the Chicago Medical Society, held March 6, 1912, with the president, Dr. J. M. Patton, in the chair. Dr. C. S. Williamson read a paper on "Recent Advances in the Determination of Tubercle Bacilli in the Sputum." Dr. G. W. Green read a paper on "Symptoms of Tumors of the Mammary Gland." Dr. William Fuller read a paper on "The Surgical Treatment of Tumors of the Mammary Gland."

DISCUSSION ON THE PAPER OF DR. WILLIAMSON

Dr. Ernest S. Moore: I have used the method just presented by Dr. Williamson in some thirty or forty cases. At the tuberculosis hospital most of our patients come to us in the later stages of the disease when there is no trouble in finding bacilli in the sputum. The method has been of assistance to me in cases of empyema with thick pus and in serous effusions. I have been able to find tubercle bacilli in such secretions on several occasions when the ordinary procedures were negative.

All of you are familiar with the difficulty of recognizing tuberculosis in elderly people when it is engrafted on an old asthma with emphysema and a broken down heart. Identical physical findings, to some extent, are present in both diseases while some of the physical signs of the older process conceal those of the more recent tubercular infection. There are very few bacilli in the sputum of these patients. Ordinary methods of examination may prove negative for weeks. The diagnosis of tuberculosis is always uncertain until tubercle bacilli have been demonstrated. In four such cases recently I was able to find tubercle bacilli easily. Ordinary smears were negative.

This method marks a real advance in the early positive diagnosis of pulmonary tuberculosis, for by its use the tubercle bacillus can be demonstrated a number of months earlier than with the ordinary methods. I wish to emphasize the need of high speed centrifugalization to obtain best results. The technic offers no difficulties and I can cordially recommend it.

DISCUSSION ON THE PAPERS OF DRs. GREEN AND FULLER

Dr. J. M. Patton: The emphasis laid on the early diagnosis of these tumors is justified, because many physicians see these patients years after they have passed out of the hands of the surgeon and find recurrences indicating that the operation was not done early enough or that it was not thorough, or radical enough. Not being a surgeon, I am not qualified to discuss the technic of the procedures mentioned, but when a physician has four deaths from recurrences in six months, all occurring within three years after operation, it goes to show that there is something wrong; that the early management of these cases was faulty. There may have been a faulty diagnosis, inability to make the diagnosis early enough, too late an operation, or too conservative an operation. Perhaps the physician is to blame. He sees these patients before the surgeon does, as a rule, and if he cannot make a diagnosis himself he should see to it that the patient consults someone who can make the diagnosis. The diagnosis of the nature of the growth should be made early enough to give the patient the benefit of the very best that he can get in the way of treatment.

Physicians are seriously to blame for neglect at this stage. Many patients come to the surgeon at a time when even immediate operation is too late. My experience of the past six months has convinced me very strongly that the responsibility rests largely on the physician. It is not right to say that it is the surgeon's fault; that he did not do the radical operation, or that something was wrong with his technic. The trouble is that the surgeon did not get the case early enough.

Dr. Fuller (closing): All that Dr. Patton has said in the discussion is true; we can subscribe to every word. The diagnosis of breast tumors is the important feature in this subject. Such sweeping measures for carcinoma of the breast as recommended in the paper are scarcely called for if the diagnosis is made early enough. Carcinoma of the breast, in most instances, is one day a local lesion, and if recognized at this time measures less radical than those recommended will often suffice. But if the diagnosis is delayed and treatment instituted late any procedure short of total ablation of all the breast tissue, muscles, fat and lymphatics above and under the clavicle, as well as in the axillary space, will rarely be sufficient for a cure.

Regular Meeting, March 20, 1912

A regular meeting of the Chicago Medical Society was held March 20, 1912, with the president, Dr. J. M. Patton, in the chair. Dr. Gerald B. Webb of Colorado Springs (by invitation) read a paper on "Studies in Tuberculosis, Illustrated by Lantern Slides." Dr. William Cuthbertson read a paper on "Displaced and Movable Kidney in Women."

DISCUSSION ON THE PAPER OF DR. WEBB

Dr. Frederick Tice: A paper of this character does not permit of discussion. We might follow the plan carried out when Koch first announced his discovery of the tubercle bacillus before a society in Berlin. At the conclusion of his paper there was no applause, comment or discussion, merely a dead silence. After a few moments the society adjourned. Every man seemed to appreciate that the announcement was the beginning of a new era in medicine.

We might view Dr. Webb's announcement in the same light. I think we are all agreed that at present we have no efficient remedy and no means of prevention of tuberculosis. A discussion of tuberculin therapy would necessarily open up the entire question of tuberculins and the methods now in use. We feel that none of the tuberculins now in use is satisfactory. It is with a considerable degree of interest, then, we must receive this announcement by Dr. Webb. It is particularly of interest at this time when we recall the many tuberculosis workers, especially the investigators and experimenters, who have long looked for a protective vaccine against tuberculosis. Dr. Webb has the credit of conducting experiments, especially on the human, along this line.

Some of the points brought out by Dr. Webb might again be referred to, especially with reference to his work on cattle, the protective vaccination of calves. That is extremely valuable work. Another interesting observation is the part played by the leukocytes, especially the lymphocytes. We have at various times been interested in different substances; at one time in the part played by the leukocytes, by the serum, by the red corpuscles, and more recently in Spengler's immune bodies which are recovered from the red corpuscles, and now in the part played by the lymphocytes. Dr. Webb's work along this line is especially interesting, and apparently very conclusive.

I believe that I voice the belief of all present when I say that we are more than gratified to Dr. Webb for this very instructive communication. He is the first to conceive the idea of using active virulent bacilli injections in the treatment and prevention of tuberculosis in the human. To conceive such a plan and to have the moral courage to carry it out is nothing less than heroic. He deserves praise as well as credit.

Dr. Lewis: Has any attempt ever been made to use an autogenous vaccine as I have seen one successfully in acne?

Dr. Webb: The attempt has been made by me but by no one else. It seems impracticable.

Dr. Webb (closing): Artificial lymphocytosis is useful in other infections. In a case of suppurating ear in which six months use of vaccines was useless, when we established an artificial lymphocytosis by placing garters on the arms a cure resulted in three weeks' time. One woman with tuberculosis kept an accurate account of the amount of sputum by weight she coughed up in eight months. It equalled her body weight. In her case the sputum was reduced to one-fourth ounce a day by artificial lymphocytosis. It is extraordinary what a reduction in the amount of sputum can be gained by artificial lymphocytosis.

As to the inoculation of the live germ in the actively tuberculous, we have used that method in forty cases. It is difficult to say whether we have done any good in the advanced cases, but we have not done any harm by it. There is one point which we noted in the case of the monkeys, namely, that when we reached about 5,000 live germs we invariably produced a lump locally. That is important, because as shown by Metchnikoff, the lump means that you have secured immunity. The system is immunized as a whole, and the infection occurs only locally. In these lumps we found the bacilli being actively disintegrated, and that shows that the monkey is vaccinated. If immunity is not present, the germs at once disperse throughout the body when injected subcutaneously. In the immunized monkey the lump forms and it contains disintegrating germs.

DISCUSSION ON THE PAPER OF DR. CUTHBERTSON

Dr. J. L. Miller: We are familiar with the frequency of movable kidney and of the fact that many people have a kidney which is freely movable and yet are entirely free from symptoms or disturbance of any kind, so that we must depend on the symptomatology rather than on the degree of movability of the kidney in determining what should be done.

These patients may complain of two types of pain, a dull pain, more or less continuous, and paroxysmal attacks of pain. In many patients the dull dragging pain in the right side is due to a distended colon or cecum. Constipated women often complain of such a pain, which disappears when the bowels are moved freely.

In regard to the paroxysmal attacks of pain, I think the pain associated with mucous colitis is usually overlooked. I have seen many patients with mucous colitis and loose kidneys advised to have the kidney put back into place. Such patients often have pain which may be mistaken for biliary colic or renal colic. On the passing of the mucous colitis these attacks of pain disappear.

The majority of patients with movable kidneys who complain of symptoms are patients who only have these attacks of pain from the time they are examined by a physician and are told that they have a movable kidney. They are neurasthenic women. Whether this is solely in the individual's imagination or

whether they actually had indefinite pain which becomes definite on account of concentration, I am not sure, but of this I feel quite certain that the majority of these neurasthenic individuals if they are convinced that the kidney is not the cause of the trouble in a very short time recover completely.

We must keep this fact in mind when we refer to the results of operations. We have in such an operation the most powerful suggestion we can bring to bear on the patient, and to my mind many of the so-called cures following operations are psychic rather than due to the correction of anatomic disturbance. We must be very careful in drawing conclusions as to the result of operation on neurasthenics. We must be sure that the patient has such a condition and that it is the operation which has given relief.

We see many such individuals who are not improved by the operation except for a time only. After a year or so the old trouble returns, just as when such an individual comes to you and you assure them that there is nothing at all the matter. They remain well for two or three months, and then they must be reassured. This must be continued to keep them in reasonable health. I do not say that movable kidney does not cause symptoms but I do find, as time goes on, that I diagnose movable kidney as a cause of the disturbance less and less frequently.

Dr. A. Goldspohn: What Dr. Miller has said is true, and because it is true there are a number of surgeons who are inclined to take the position that anchoring the kidney is an operation that is not at all or very little called for. That is a mistake quite as much as it is a mistake to regard every kidney that is found low down as the cause of trouble. We do find kidneys that are hanging down quite below the normal location in the abdomen that are not the source of trouble, and once in a while the kidney is low from birth. But that a descending, or floating or abnormally movable kidney is the source of pain in some instances is a very positive fact, and to show that it is not a mere matter of suggestion that cures, as Dr. Miller intimates, I will cite the following cases:

For several years I had a patient with most severe periodical pains such as we might have from kidney or gall-bladder colic. I looked her over without saying what I was after. I said nothing at all about her kidney. To relieve her during attacks I put her in the Trendelenburg posture and then manipulated with the idea of reducing something if there was something to be reduced. Right then and there the pain would stop, just as it would in returning a strangulated hernia or something of that nature.

Another young lady who had no pelvic trouble, but who had a very pronounced digestive disorder so that she could not eat at all, had her case pronounced as one of ulcer of the stomach by internists. We prescribed internal remedies and a very strict dietary for several weeks, but without success. I put her in the Trendelenburg posture and applied a belt made of inelastic cloth, three or four layers in thickness and some eight inches in width, long enough to go around the body over the hips, with perineal straps, pinning it around her very tight, taking the hips for the main anchorage of support. Beneath that I put a large pad of cotton rolled very tight in a cloth and pinned to the bandage in front in such a way as to hold the kidney up. I told her nothing, except that she should keep on the bandage as long as she could bear it.

She came back in a week feeling so much better that she could eat well. She had never taken off the bandage for fear that she could not get it back right. A normal individual strapped up like that would certainly have had some complaint to make. There was no suggestion or operation in that case.

As to the technic of operations, I have not found the fibrous capsule to be a structure sufficiently strong to serve as an anchor, either in stitching it in a seam or in twisted ropes fastened anywhere. The fibrous capsule is the toughest part of the kidney but has not enough of substance to do this work. The most fruitful thing is the suggestion made by Dr. E. Wyllys Andrews some years ago to use the fatty capsule as a mattress, picking it up on both sides of the kidney, as thickly as possible and anchoring it between the muscles, by means of mattress sutures passed transversely between the edges of the muscle. The fatty capsule

can be made of sufficient strength to do this holding; and the sutures pass down through the fibrous capsule likewise. Since I have practiced this combination, I am not aware of any return of the displacement, and it is not necessary to utilize drainage. Close the wound completely.

I do not like the idea of divesting the kidney of its fibrous capsule and do something that involves cicatricial formation between the gland substance and the parietal connective tissue structures.

Dr. D. Lewis: It would be interesting to have the essayist tell us what additional pathology he found in the twenty-five cases which he reported. I have found in displaced kidney, stone, tumor, tuberculosis, carcinoma and abscess of the pelvis of the kidney and I have thought that these conditions were at times responsible for the symptomatology perhaps more than the displacement itself.

Dr. J. F. Hultgen: In regard to the relation of movable kidney and pyelitis and colon bacilluria, between movable kidney and kidney stone and septic bilateral hematogenous infection of the kidneys, I have never advised a stitching up of the kidney, although I may have injured some of my patients by omission. Whether a tuberculous pyelitis produces a movable kidney I do not know. Perhaps it does.

Colon bacilluria is exceedingly important. It probably occurs most often in prolapsed or freely movable kidney or kinked ureters. The occurrence of such a bacilluria could be prevented by straightening out the ureter. I think it never occurs in a healthy kidney; the genito-urinary tract must have been traumatized somewhere in its course. The upper end is productive of more harm than the lower end. Frequent catheterization and cystoscopy contribute a great deal to pyelitis, and then, of course, pregnancy with its accompanying disturbances.

As to the hematogenous disturbances, they are not as rare as we think they are. They should not be so difficult to diagnose. A blood count would help to differentiate between a pure kink of the ureter and hematogenous infection and cholangitis, renal colic or gall-stone colic. There are practically three groups of germs concerned in the production of those symptoms, the paratyphoid and paracolon groups and the pus germs. The blood-picture would be of great assistance in the diagnosis.

There are still too many patients operated on for movable kidney. In nervous people we must go very slow in advising operation.

Dr. Cuthbertson (closing): Unfortunately Dr. Miller takes the stand the majority of men take. He says that he has not seen patients obtain more than temporary relief from a kidney operation. On the other hand, I have seen patients recover from operation who have consulted every other kind of specialist without obtaining relief. When the kidney was stitched back in place they were relieved at once and for all time. These patients have gained from ten to twenty pounds in weight. Their gastric symptoms have disappeared, and in some cases the chronic constipation from which they suffered has disappeared.

I do not by any means recommend the surgical replacement of every displaced kidney. Dr. Goldspohn stated that many cases of freely movable kidney do not cause any symptoms, except that the woman will at times feel it there. The patients often discover the condition themselves. Where the kidney is not making trouble I would not recommend surgical replacement, but where there is a definite symptomatology connected with a displaced kidney, and where other means have been tried without giving relief, I advise surgical replacement, and in the majority of cases I have been successful. I have followed some of these patients for five years and with the exception of three, the kidneys have remained in place and the patients have remained well.

Dr. Goldspohn stated my ideas in relation to the subject very tersely.

In regard to the pathology in these cases, I met with three cases of hydro-nephrosis and in the cases where the pelvis of the kidney was markedly distended, I incised the pelvis and the urine would project itself with force from the kidney pelvis. I stitched up the incision, replaced the kidney and the patients recovered. I have not met with any case of tuberculosis or stone or pyelitis. A constant condition of the kidney which I have found has been that of passive congestion through obstruction of the venous flow.

I have seen the work of other surgeons where the gland was not enlarged. I have doubts in my mind as to the advisability of operating on kidneys which were not enlarged or which showed no gross evidence of pathologic disturbance.

I have not gone into the differential diagnosis because it is such a weighty subject that it would take too long to cover it. But the examination of the blood in these various conditions which Dr. Hultgen named is of great value in making a differential diagnosis. It is not difficult and very satisfactory. You can make a diagnosis of stone in the pelvis of the kidney by the use of the catheter or the x-ray.

CHICAGO LARYNGOLOGICAL AND OTOLOGICAL SOCIETY

Regular Meeting, Dec. 19, 1912

A regular meeting of the Chicago Laryngological and Otolological Society was held Dec. 19, 1911, with the president, Dr. Charles M. Robertson, in the chair.

DEMONSTRATION OF CASES

Deformity of Nose Corrected by Transplantation of Pieces of Rib,
Fracture of Zygomatic Process and Dislocation of Malar Bone.

DR. ROBERT H. GOOD

CASE 1.—Five years ago this patient developed an abscess in the nose, just at the tip. A physician called it a carbuncle, but it discharged for three or four weeks and destroyed the cartilages of the nose and part of the septum, so that the nose had fallen down very badly. The patient consulted Dr. Good five months ago and Dr. Good advised the taking out of a piece of a rib and putting it into the depression, to which he consented very readily, as he had consulted three or four men all of whom had advised leaving it alone. Dr. Good made an incision from side to side, removed the periosteum and lifted it up as far as the tip of the nasal bone. He drew the skin off the tip of the nose and then took a piece of the seventh or eighth rib, of the size he thought would fill out the depression, and pushed it through the opening down to the tip of the nose, but he noticed that when he had this piece in it was impossible to bring the nose up to where it ought to be. So he took another piece of the rib, a little wider than the first, and put it underneath the other and made a very good looking nose. With very fine catgut he made a subcutaneous suture in the scar in order to make as little deformity as possible. Collodion dressing was put on followed by a plaster-of-Paris splint over the surface of the nose. The patient was kept in the hospital for a week. There was absolutely no reaction and no pain. The x-ray at this time shows that the piece of bone Dr. Good put in had slipped up a little bit just over the nasal bone, so that there was a little depression left. The patient was discharged and he wrote back in three weeks that there was still a little depression, so he was told to come back, when it was seen that the bone had slipped up a little. Dr. Good pushed it down and suggested that paraffin be injected. He did another operation and put another piece of rib into the nose from the tip, and as this was not sufficient to build up the depression he took still another piece and put it underneath. There are four pieces of rib in the nose.

CASE 2.—This patient, a middle-aged man, fell down the stairs and fractured the cheek bone so that there was quite a depression. He did not consult a doctor immediately but waited until pain developed. The pain was located in the inferior orbital region. He at first consulted a general practitioner. When Dr. Good saw him he at first excluded antrum disease. There was no tenderness on deep pressure. The zygomatic process was broken and this part was pushed down and the malar bone was, as it were, everted or turned in. At first Dr. Good intended putting in a large sound underneath the edges of the zygomatic process and prying it up, but was unable to do it. Afterward he found that the zygomatic process had been fractured in two places. One inch of the bone was lying loose. He refractured the callus sutures from the malar bone, when he was at a loss to know how to keep the malar bone in place as there was nothing upon which to support it. It occurred to him to use Carter's nasal splint. He

bored a hole and put in a silver tube, and kept the malar bone in place until it was perfectly healed. He left the inch of bone in place and it has united perfectly.

PRIMARY MASTOIDITIS—FOREIGN BODY IN EAR FOR TWO YEARS

HARRY KAHN, M.D.

CASE 1.—The first case, one of primary mastoiditis, was in a girl aged 8 years who had suffered with scarlet fever and during the course of her illness became moderately deaf in the left ear. During the stage of desquamation, when she was washed back of the ear, she complained of pain and this pain continued until there was a decided puffiness back of the ear and the ear was pressed forward. Dr. Kahn saw the case at this time and there was no evidence of any middle ear disease. He did a paracentesis just because he wished to see if there was anything in the middle ear, but there was no discharge. The patient was sent to Michael Reese Hospital. She was kept for a few days under observation, and finally, under gas anesthesia, because the patient suffered from a mitral lesion and had also much albumin and many casts in the urine, Dr. Kahn opened the mastoid in the ordinary typical way and found a sinus located about half an inch below where the antrum should be. The patient did not do very well under the anesthetic. The pulse became very rapid so they hastily chiselled away the cortex of the mastoid and found much granulation in the posterior portion of the mastoid, back to the sinus, and when they got into the antrum they found that it was perfectly free from granulations. This case is one of primary mastoiditis, as the history shows. It followed scarlet fever, which, according to Politzer, is very rare. Politzer states that primary mastoiditis following acute infections is very rare, that it usually follows trauma or is idiopathic in origin. This infection occurred, moreover, in a child, which is also rare. Primary mastoiditis usually occurs in adults rather than in children. As to the mode of infection, whether hemogenous or not, Dr. Kahn does not know. He thinks the hemogenous method has not been proven, although this case would rather favor that theory.

CASE 2.—The second case is one of much interest. A child came into the hospital last June with a history of chronic otitis media with acute exacerbations. After he had been sick for about two years with a running ear, with occasional acute exacerbations, the ear was found filled with polypoid masses. A probe was passed in and the whole promontory was found to be rough. A foul smelling pus exuded from the granulating surface. He was running a temperature of about 100 to 102 F., with some pain. The hearing on that side was almost normal. It was decided to do a radical mastoid because of the many granulations and because the patient had already been treated for two years. On opening the mastoid the operation progressed fairly well until it came time to enter the antrum when difficulty was encountered. A piece of stone was finally scooped out of the ear when the antrum was entered. This stone had been fixed apparently in the opening of the Eustachian tube. The dura was exposed but there was no other feature. After the operation the parents were asked if they knew anything about the stone getting into the ear. The father stated that the child had had a running ear, and that the boy complained that he had a stone in his ear a couple of years before but the parents had not believed it.

ACOUSTICS FOR OTOLOGISTS, BY PROFESSOR EDELMANN

J. HOLINGER, M.D.

Edelmann, a physicist who was for twenty years connected with Bezold in the investigation of normal and pathologic functions of the ear, gives to the otologist a book which will clear up many questions, for instance in reference to Rinné's, Weber's and Schwabach's tests. He then proposes a unit for measuring the capacity of hearing and calls it "phon." Finally he gives a description of a mechanically accurate model of the middle ear which he constructed together with Bezold. This allowed him to define the ratio in which movements of the drum

membrane and handle of the hammer, caused by sound waves, are transmitted to the fluid of the labyrinth. It is the inverse ratio of the specific gravity of the two media concerned, namely, the air and the labyrinthine fluid.

DISCUSSION

Dr. J. Gordon Wilson: Dr. Wilson thinks that if there be one branch of otology more than another in which the average otologist is deficient, it is acoustics. He is a poorly equipped otologist who does not inquire into the scientific basis on which his specialty rests. The society owes Dr. Holinger thanks for bringing this subject before them. As it was being read one could not but feel that to him this presentation of an account of Edelmann's work, associated, as it is, with memories of Bezold, was a labor of love.

No man has made his name so justly famous in the practical application of acoustics to otology as has Dr. Edelmann. His long and intimate relationship with Bezold is a great example of the benefit to otology of that principle of cooperation which is now exerting an ever increasing influence in the advancement of science. Dr. Wilson states that one would like to dwell on the importance of such united work and of its possibilities, but one example of what he meant would suffice. It is notorious that aids to hearing are crude, unsatisfactory and applied in a haphazard, unscientific way. Possibly the otologist may never reach the perfection now attained by the ophthalmologist in his aids to vision. But what has the otologist done along this line? Alone he probably will accomplish little, but working along with a physicist the field is wide and even now practically unexplored. When the microphone was invented all had great hopes of the benefits to the deaf which would accrue from the application of its principles. These principles have been applied and there are numerous aids to hearing on the market, but the results are not satisfactory. How can they be improved? It is to the physicist the otologist must look for aid not only to improve the microphone but also to suggest other methods of experiment to gain strength and clearness of sound.

Dr. Wilson thinks that the importance of Dr. Edelmann's book does not consist alone in the amount of knowledge it gives but in its suggestiveness. One thought that occurs to him is this: Do we realize how easily the acoustic nerve fatigues not only in anemic and other blood conditions but in all conditions which tend to nerve fatigue? Do we realize that we can shut out light and rest our eyes, yet we cannot or do not correspondingly rest our acoustic nerve? Do we realize the full significance of the fact that Nature has at all stages of our phylogenetic development insisted that hearing should be the sense ever on the qui vive? Since this is so Dr. Wilson asks that this fact be applied to a nervously tired woman already showing slight signs of acoustic deafness and then ask if it is a wonder she gets gradually worse.

In his review Dr. Holinger has referred to the disputation between Bezold and Edelmann on the one hand and a distinguished German professor on the other. That disputation was not without its benefits. It drew attention to and emphasized the findings of one of Bezold's most important papers. It drew attention to the difference between a perfect fork and an asymmetrical fork. A considerable space, as Dr. Holinger said, has been given in the treatise to these points because they are of the utmost importance in the Rinné, in the Weber, and in the Schwabach test. Here Dr. Holinger interpolated the following paragraph, with which Dr. Wilson cannot quite agree: "You have often heard the argument that in the Rinné test we compare things that cannot be compared, namely: longitudinal vibrations of the handle with transverse vibrations of the prongs of the tuning fork. We compare the time of the vibrations, and here you have the proof that the time of vibration of the handle is identical with the time of vibration of the prongs; as long as the prongs vibrate transversely the handle must vibrate longitudinally."

So far as the Schwabach test is concerned Dr. Wilson thinks that one may here offer no objections. But he fears that the conclusion which Dr. Holinger would have us draw will not satisfy the objectors to the Rinné test. The objec-

tion urged against the Rinné test is not that we compare time of vibration of the handle with time of vibration of the fork, which are equal, but that we compare amplitude of vibration of handle with amplitude of vibration of the fork, which are unequal. In order that the comparison for the Rinné test be scientifically correct we should have equal time and amplitude of sound at the prongs and at the handle. But we have not equal amplitudes. The intensity (amplitude) of sound at the prong of the fork is at its maximum, at the handle at its minimum. In addition to this we have to take into account the damping effect of the cranial bones on the forced vibrations at the end of the handle. These are the objections to the Rinné test. Bezold recognized the justice of the objections when he says, "The air conduction under normal conditions is, therefore, far superior to bone conduction. The superiority of air conduction becomes more marked the lower the tuning fork used." Dr. Wilson's "a" tuning fork is heard by air conduction for 90 seconds. When its sound has died away on the mastoid process (that is, has ceased to be heard by bone conduction), it will be heard for 30 seconds longer by air conduction if its prongs are held in front of the external canal.¹ To get over the objections and place the test on a practical basis Bezold establishes a normal with which he compares all his results. He says, "Rinné's test, as it is found in the normal hearing, is recorded Rinné a+30 (seconds)." Dr. Wilson states that he has dwelt on this because Dr. Holinger is reporting Edelmann's work on the relative duration of vibrations and so has not referred to the consideration of the amplitude, a subject not discussed in the treatise under consideration.

Dr. Wilson gives one point in conclusion. He thinks that we have to some extent standardized our testing methods but does not feel that as a Society the men are so working as to get the best results from their collective data. It seems to him that it would be of advantage if the Society could devise some simple scheme for routine examination to be a standard basis on which the members could all work. This would enable them to sift intelligently, and correlate the various data dealing with the acoustic tests so constantly being presented to the society.

Dr. Holinger (closing) thanked the Society for their kind attention and Dr. Wilson for his discussion. He states that in the Rinné test hearing by air conduction for the middle tones is much better than hearing by bone conduction, and if the fork a' is used it is heard thirty seconds longer by air conduction than by bone conduction. This has to be accepted as a fact and our own conclusions drawn from it. Our conclusions, especially as to diagnosis, are such that we can say that so far the pathologic findings have always justified the conclusions that we have drawn from this fact. In other words, whenever we find the hearing by bone conduction improved and, on the other hand, the hearing by air conduction lessened, we can draw the conclusion that there is an affection of the sound-conducting apparatus. Dr. Holinger called attention to the beautiful series of experiments, which all have read, that have been made on guinea-pigs which were exposed to different sounds, either sounds of different pitch or sounds of different intensity. The whole series of those experiments was published about two years ago in the *Zeitschrift für Ohrenheilkunde*, and at that time it was found that if a guinea-pig is exposed for a certain number of hours each day to one clear tone certain distinct circumscribed foci of degeneration in the labyrinth are found. There were quite a number of objections offered by those gentlemen who insist that hearing is mainly accomplished by the sound being transmitted to the bones of the skull and of the body and that in these experiments it is not the direct transmission of sound through the air which produces the degeneration but the transmission of sound through the floor of the cage, through the wires of the cage, which the animal in its excitement often will take hold of with the teeth, and in this way the sound is transmitted through the bone directly to the ear. Siebermann laid distinct stress on the fact that all his animals were not resting on the floor of the cage directly but with a thick layer of muffling

1. Text-Book of Otology. Bezold and Siebermann, translated by J. Holinger, p. 68.

material, so that the vibrations of the floor of the cage cannot be transmitted to the animal. But, nevertheless, the other gentlemen insisted upon their objections. Now he has made another series of experiments, which are not yet published, and they consist of identically the same experiments as published, but the animals were removed from the cage beforehand. The conclusions Dr. Holinger would draw from the experiments is that sound must be transmitted through the air and that the middle ear is the most important in the transmission of it.

Two cases of total nerve deafness were reported by Dr. William L. Ballenger.

REMARKS ON DEMONSTRATION OF AN ORIGINAL MODEL RECONSTRUCTING THE CANALS OF RIGHT AND LEFT LABYRINTHIS

E. R. LEWIS, M.D., DUBUQUE, IOWA

Dr. Lewis stated that reconstruction taught by the Viennese school is faulty in respect to treatment of anterior and posterior vertical canals and gave reasons for his inability to accept their treatment of these canals. He gave a graphic representation of vestibular equilibrium according to their conception, unbalance depending on dextro-preponderance or sinistro-preponderance, and gave his conception of vestibular apparatus as the analog of "universal joint." Steps in reconstruction of model were presented and demonstration of rotation experiments with model made. Dr. Lewis also offered the following points of interest: vertical nystagmus a proof of imbalance depending on preponderance other than right and left; antero-preponderance and postero-preponderance, simple oblique antero- or postero-preponderance, combined oblique antero- and postero-preponderance; simple impulses and summation impulses; analysis of horizontal, vertical and rotatory nystagmus from the standpoint of the pull responsible for slow component, showing horizontal nystagmus to be a simple motion, vertical and rotatory nystagmus to be resultant motions. He also gave graphic representation of vestibular equilibrium and imbalance according to model and told why stimulation of all canals of one side simultaneously results in rotatory nystagmus. Gave deductions concerning effects of cupular movement in posterior canal and offered a suggestion as to nystagmus nomenclature.

DISCUSSION

Dr. J. R. Fletcher in discussion stated that this theory presented by Dr. Lewis has been held for a long time. He is very much interested in this but not convinced. The model is certainly an interesting one and it would seem from what we see that one might explain vertical nystagmus by the minus and plus idea which Dr. Lewis has expressed, but Dr. Fletcher cannot exactly see in the study of that particular grouping of the working of the canals together how one can stimulate the fluid to flow through the posterior vertical canal, in the way Dr. Lewis says, when they are both tilted up. He is perfectly ready to accept this grouping, and has heard it talked of a good deal, but he does not stand for the whole grouping. He thinks we ought to talk in planes in talking of nystagmus. One must remember that with the head down and rotated we do not get a nystagmus exactly like this; we get a nystagmus according to Flouren's law; we get nystagmus in one plane in each canal. If this is true, we upset Flouren's law; if it is true we upset the further studies of Goltz in 1870. Flouren carried on these experiments in 1824 and evolved the law that each canal produces nystagmus in its own plane. Goltz, in 1870, confirmed the finding of Flourin and his experiments excited universal attention. Barany's work has been scientific, but not exactly what we mean by scientific. His has been observation largely. His idea was to collect all the literature which had been accumulated on this subject in the various languages and tabulate the conclusions. Then he examined his patients and tabulated his results. Then he studied his immense pile of material and drew his conclusions, which are known. A great deal of this work is hypothetical and we have to assume a good deal. The moment we assume a good deal we leave the case open for a great many errors.

Dr. Fletcher referred to a case of Dr. Shambaugh's, seen recently, in which there was total destruction on one side and no evidence of disturbance of equilibrium.

Dr. Lewis (closing) stated that he quite agreed with Dr. Fletcher in regard to speaking of nystagmus in terms of planes. Because he does agree with him he drew the attention of the Society to the fact that when one speaks of rotatory or vertical nystagmus one cannot speak in terms of canal planes, because there are no canals lying in the planes of rotatory or vertical nystagmus.

In reply to Dr. Fletcher's statement that he did not agree with Dr. Lewis as to the grouping of the canals according to the model, Dr. Lewis replied that this grouping is not a question of theory; it is correct or incorrect anatomy, which does not permit of argument.

Dr. Fletcher's difference of opinion in regard to what Dr. Lewis put forward here as an original conception of the functional co-relation of the canals, may be only as regards the correlation of the superior of one side with the posterior of the other side. These canals as shown, lie in the same plane and have opposed ampullæ. Dr. Lewis states that if he understands Dr. Fletcher's meaning correctly, he is not prepared to accept the theory that they are co-related simply because they lie in the same plane and have opposed ampullæ. Dr. Fletcher stated that if this conception of labyrinthine co-relation is to be accepted it would be vitiating the law of Flouren. Dr. Lewis thinks he must have failed to make himself clear as he had nothing in mind which would come into conflict with Flouren's law. The confusion undoubtedly arose from his calling attention to the fact that we have no canal lying in the posterior or in the transverse vertical plane of the skull.

Dr. Fletcher referred to Dr. Shambaugh's case. Dr. Lewis can see how with this functional grouping in mind one might conceive a possible explanation of the case. With the old right-and-left, superior-with-superior, posterior-with-posterior functional grouping in mind he cannot see how one could conceive a possible explanation of such a case. Of course, it is obvious that it is out of his province to enter upon any attempt to explain any concrete cases in this discussion and he is sure Dr. Fletcher had nothing of the sort in mind when he alluded to the case.

Regular Meeting, Feb. 20, 1912

CASE OF HEMORRHAGE OF TONGUE IN A HEMOPHILIC PATIENT

OTIS H. MACLAY, M.D., CHICAGO

Hemorrhage occurred at first under the mucous membrane, inferior portion of tongue on left side, and into the tissues of the neck. Swelling of tongue was so decided that incision was made to free clot, in order to relieve embarrassed respiration. Oozing from this region was constant, although packed. Pulse during last twelve hours gradually increased from 90 to 145, quality good. Respirations and pulse stopped suddenly. Tracheotomy failed to aid.

DISCUSSION

Dr. J. Holinger stated that there seemed to be a discrepancy of opinion as to what hemophilia really is. One of the men who first described the picture of the disease (a man living now in Chicago and whose work dates back to the early seventies) brought out these two facts: that hemophilia is extremely hereditary and that it is confined to the male sex. Dr. Holinger states that he did not hear Dr. MacLay say anything of hemophilic ancestry in his patient. This is important. This part of the picture is usually brought out strongly in the fact that nearly all male members of the family died of hemorrhage from some insignificant injury which otherwise would not lead to serious consequences.

There is another question as to the accuracy of the diagnosis: hemophilia occurs in this case in *sound tissues* whereas bleeding *into the tissues* does not belong to the picture of hemophilia. Sub-mucous hemorrhage, as described by Dr. MacLay, does not occur in hemophilia so far as Dr. Holinger knows. This seems to be rather an inflammatory process, probably some form of glossitis. These inflammatory processes are different in all details and essentials from the classical picture of hemophilia, where a young man or boy may slowly, in the

course of days or weeks, bleed to death from some insignificant scratch or small cut in the finger, such as everyone frequently has. The bleeding is not into the tissues but to the outside and will keep on in spite of compression, or suturing, or cauterization, and even deep burning with a red hot iron. Such a case baffles the skill and resourcefulness of the best surgeon.

Dr. Holinger thinks that the report of Dr. Maclay was of great interest to all but that it ought to come under another heading.

Dr. Ira Frank reported briefly three cases of secondary hemorrhage, all controlled by the subcutaneous injection of horse serum. In only one case, however, could an absolute history of hemophilia be obtained.

The first case was admitted to the Michael Reese Hospital with the following history: one week previous had had bilateral paracentesis performed for an acute otitis media. The bleeding at the time did not seem unusual. The mother stated that the bleeding continued all day. Toward evening the condition seemed alarming and since the bleeding still continued a physician was called. He packed both canals firmly but without results. Finally horse serum was injected subcutaneously with complete arrest of the hemorrhage. The child was sent to the hospital and after a few days developed an acute mastoiditis which required an operation. Before operation, however, 10 c.c. of horse serum were injected. The bleeding at the time of operation was not excessive and no secondary hemorrhage followed.

The second case was one of secondary hemorrhage following a septum operation. A posterior tampon failed to control it. Twenty c.c. of horse serum subcutaneously stopped it within twenty minutes.

The third case was one of secondary hemorrhage following an adenectomy. Twenty c.c. were injected subcutaneously with complete arrest of hemorrhage within twenty minutes. From neither of these two cases could a history of hemophilia be obtained.

Dr. Hugh Cuthbertson referred to Dr. Holinger having said that hemophilia was usually hereditary in the male line and stated that about three weeks ago he was called to see a female baby about three weeks old, for Dr. W. Herriman. It was bleeding at the naval and the wound had been covered with gauze and adhesive plaster. He plastered it over with collodion and the hemorrhage stopped for a few days when it again began bleeding at the naval and at the gums. It finally died. There was a distinct history of heredity in the female line.

Dr. E. R. Lewis in discussion referred to a child about 7 years old which he had seen in consultation. The case gave a history of acute otitis media and Dr. Lewis was called on account of the hemorrhage from the external meatus. The canal had been packed with gauze saturated with Monsell's solution. As he removed this a stream of blood spurted about a half inch upwards into the air. The canal was again quickly packed with gauze. Within two or three minutes the respiration was completely obstructed because of the development of hematoma on the side of the pharynx. By inserting the finger into the throat it was possible to crowd the mass outwards sufficiently to allow respiration. The child died in about four minutes. The case was doubtless one of hemorrhage from the bulbus jugularis through dehiscence in the tympanic floor.

Dr. Otis H. Maclay (closing) said he did not get a history of bleeding ancestry in this case, but the patient had had many previous hemorrhages. He did not go into the case with the mother since she was much concerned over the present illness, and the father was not very well informed. He believes it was a case of hemophilia. He said that as far as he knew a hemophilic condition is just as liable to cause bleeding subcutaneously as externally, and he does not believe that the fact that in this case the bleeding was under the skin and mucous membranes tended to disprove that he was a bleeder.

Concerning the point that Dr. Ira Frank mentioned—the use of horse serum—there is the question of anaphylaxis to be considered. On the other hand, you have the human serum. There is always some relative or someone who will give the amount of blood necessary, and there is no danger of anaphylaxis.

Dr. Ira Frank stated that grain 1/100 to 1/150 atropin will do away with anaphylaxis entirely.

THE BLOOD SUPPLY OF THE INTERNAL EAR OF THE PIGEON

DANIEL B. HAYDEN, M.D.

(Abstract)

Dr. Hayden demonstrated his preparations of the blood-supply of the internal ear of the pigeon. He showed that the arterial supply was derived from the labyrinthine artery. That this vessel after having entered through the meatus acousticus internus immediately divided into an anterior and posterior division. From the anterior a ramus went to supply the anterior crus of the superior canal and another ramus to the utricle and saccule. From the posterior division of the labyrinthine artery was given off a branch which went to the crus commune, and this latter subdivided into two branches, one to the anterior crus of the posterior canal and the other to the posterior crus of the superior canal. Also from the posterior division several small branches were given off which went to supply the utricle and saccule, and one large branch which went to supply the cochlea. The veins for the canals accompanied the arteries. In the cochlea the vein passed along the anterior surface and looping over the vestibule received branches from the utricle and saccule and passed out through the aqueductus cochlea. Dr. Hayden was able to trace several small veins and arteries out to the very edge of the bony labyrinth but found none that communicated with the sinuses that surrounded it.

SEROUS AND PURULENT MENINGITIS

NORVAL PIERCE, M.D.

Dr. Pierce's paper dwelt on the difference between serous meningitis and general septic meningitis following otogenous suppuration from a pathologic standpoint, discussed the differential diagnosis and reported two cases in which lumbar puncture yielded a liquor the content of which was somewhat misleading. He accentuated the fact that serous meningitis might have the same symptomatology as septic meningitis, i. e., headache, stiff neck, choked disk, Kernig's sign, and fever, the latter symptom not being attributable to the serous meningitis but to the primary inflammatory nidus, ear suppuration, septic thrombosis of the lateral sinus, etc. It was of the greatest importance that we differentiate the two conditions. The most reliable means of differential diagnosis is the lumbar puncture. Although the cellular content of the liquor may be great in both forms, the point of differentiation between a purely serous meningitis or a serous meningitis accompanying a localized septic meningitis that is walled off and a septic meningitis that has become general or is at the moment spreading, is the presence of living microorganisms in the liquor obtained by lumbar puncture. In one of the reported cases of abscess of the temporal lobe with a small localized area of meningitis between the roof of the antrum and the abscess cavity, the cytologic content was very high, giving to the liquor the appearance of thin pea soup, but no living microorganisms were obtained. The patient's recovery after draining the brain abscess was continuous. The clinical course precluded the existence of anything but a small walled-off area of meningitis accompanied by a serous meningitis. The other case, proven on post-mortem to be a septic meningitis which involved the covering of an entire hemisphere, gave, on lumbar puncture, a fluid which was normal in color, transparency and tension and contained no microorganisms. In explaining this rare and puzzling condition he drew attention to the fact that in lumbar puncture we obtain the cerebrospinal fluid from the subdural space and that this space within the skull is only a potential space, while the subarachnoid space is a positive space. In the spinal canal the relationship is reversed, the subdural space is the positive space and the subarachnoid is the potential space. It seems as though it were possible, in view of the findings in the case he reports, that one space can be completely blocked off from the other.

DISCUSSION

Dr. L. W. Dean asked Dr. Pierce to describe the method of after treatment of brain abscess by means of glass drainage tubes.

Dr. J. Holinger stated that it seemed to him that the only difference between a serous and a purulent meningitis, in the mind of Dr. Pierce, was the clinical course of the process. If the patient dies he has had a purulent meningitis, if he gets well he has had a circumscribed or a serous meningitis. The case reported by Dr. Holinger last year before this Society shows the fallacy of this reasoning. In this case he could see the pus appearing in the roof of the tympanum and there was no question but that the meningitis was purulent in character. The patient recovered. Eight or nine months later the patient died; the autopsy showed evidences of old diffuse inflammation on the brain. The fibrous strands stretched across the whole base and upwards to the hemisphere and convexity. Dr. Holinger does not see what more positive evidence one could demand for a diagnosis of diffuse purulent meningitis. Many months after the recovery the patient succumbed to a new attack of meningitis following a second acute otitis media.

As regards the prognosis of purulent meningitis, there are a number of things to be considered: for example, the virulence of the microorganisms, the power of resistance of the individual, etc.; these are but working expressions that we cannot well do without. When we attempt to argue them out of existence we often only succeed in replacing one question by another.

Dr. L. W. Dean stated that the paper read by Dr. Pierce was of especial interest to him because of the difficulty which one has in making a differential diagnosis between serous and purulent meningitis. Two cases have been presented that would illustrate the difficulty in making this differential diagnosis.

The first case was one of general sepsis that had in the first few days, in addition to the evidences of a general sepsis, the typical symptoms of meningitis. The patient died at the end of ten days from sepsis, the symptoms of meningitis disappearing before death.

The second case was considered to be a typical case of meningitis. It had all the symptoms of meningitis except the finding of the living organisms in the cerebrospinal fluid. Post-mortem examination showed only a serous meningitis with extensive suppurative areas in the lungs and other parts of the body.

Dr. G. W. Boot stated that the diagnosis of meningitis is at times most difficult. During the past summer he had occasion to see in consultation with Dr. Williams a young woman who was taken sick about three weeks before graduation from one of our universities. The only point of importance in her medical history was that she had had several attacks of cystitis in preceding years. Her symptoms pointed strongly towards meningitis. There were heightened reflexes, *tâche cérébrale*, disturbed cerebration, and so on. Dr. Boot was asked to see if there was any source of an intracranial infection in the ear. The left membrana tympani was found to be pinkish in color but not reddened as in acute suppurative otitis media. It was edematous and swollen. Paracentesis did not evacuate any liquid. The right ear showed nothing abnormal. Lumbar puncture gave a perfectly clear liquid that did not differ morphologically from the normal. The patient died in the course of a few days and post-mortem examination revealed thrombosis of the superior longitudinal sinus, of both lateral sinuses as far as the mastoid processes, of the torcular, and of every vein in the pia on the convex surface of the cerebrum. None of the vessels at the base of the cerebrum were thrombosed. There was a large area of softening in the centrum ovale of each hemisphere. The appearance of the left membrana tympani during life was explained by the passive congestion caused by the thrombosis above.

This brain has been preserved and Dr. Boot hopes some time to demonstrate it to the society together with a more complete history of the case.

Dr. Norval Pierce (closing the discussion) stated that regarding after-treatment of brain abscess with the glass tube there is no irrigation carried on immediately after the operation. At the first dressing or in about 48 hours, irrigation

is carried on through the tube. If the tube becomes displaced it is reinserted into the cavity until no discharge comes away. The tube ended just at the cutaneous margin of the mastoid wound, so that the pus discharged through it into the external dressing. The mastoid wound is left open, of course, and the packing was carried on around the tube so that the latter is surrounded by dressing. These tubes are very easily made to fit each individual case.

About the leukocyte count: Dr. Pierce believes none was made in either case, at least none appeared in the hospital reports as he copied them. He does not know that they would have been of any very great service.

Regarding the fever in the case of basal fracture with hemorrhage from the ear: in all probability some inflammatory process was going on in the ear. It usually does when the drumhead has been ruptured. Absorption of a hematoma within the skull with extravasation within the brain, would cause a febrile reaction.

This is an important matter, the differentiation between septic, serous and purulent meningitis. We know very little about the real nature of serous meningitis. We have got this far: we can say that the fluid in serous meningitis is not a transudate in the sense that we speak of pleural exudates. It is an increase in the normal fluid. This increase is in all probability due largely to increased activity of the secreting organs which normally supply the fluid, the tela chorioidea.

Some progressive young man here in Chicago should go to work at that problem of the circulation of the cerebrospinal fluid and work it out. Whether there is at any point a direct connection between the subdural and the subarachnoid spaces is still problematical. There is a strong probability that there is a distinct difference, chemically, between the cerebrospinal fluid in the dural sac and the fluid in the ventricle.

The differentiation from a clinical standpoint is important because it is easy to imagine that we might transform a serous meningitis into a septic meningitis. In fact, Dr. Pierce believes that he has seen two cases where that has occurred. Therefore we should be very loathe to excise the dura in the midst of an inflammatory focus such as we have in mastoid inflammation, before we are quite sure there are adhesions between the dura and the pia. Before we excise at this point we should resort to lumbar puncture to see what effect that has on the meningeal symptoms.

In summary Dr. Pierce states that he has tried to establish in the paper that the only differential point between serous meningitis or a purulent meningitis that is at the time walled off, and general septic meningitis, is the presence of living microorganisms in the cerebrospinal fluid; and this point leads him to accentuate the necessity for the most scrupulous care in making the spinal puncture because the fluid is so easily contaminated from the skin and from the instruments, receptacles and manipulations necessary in carrying on the examination.

Dr. Pierce states as an instance that this has occurred: he made a spinal puncture in a case where the cellular content of the fluid was very high, with marked symptoms of meningitis, and after two days the culture showed growth of microorganisms. But, by the time he received the report from the laboratory the patient was practically out of danger, all symptoms of meningitis having disappeared. Then he immediately made another spinal puncture, using infinitely more pains than in taking the first and got no microorganisms in culture. The difference was undoubtedly a matter of contamination, probably from the skin.

It is Dr. Pierce's practice, therefore, to thoroughly scrub the entire lumbar region. Then wash thoroughly with benzine. Then, after this is dry, to paint and rub in iodine-corrosive sublimate solution, and if you follow this practice you can pretty nearly exclude contamination from the skin, though there are other things, of course, that can cause contamination if all your operations are not carried on with the most scrupulous care.

HEMORRHAGE OF TONGUE IN HEMOPHILIC PATIENT

OTIS H. MACLAY, M.D., CHICAGO

Patient was a man, aged 22 years; weight about 155 pounds; appearance normal and healthy; features well rounded, almost plump. History of hemophilia, dating from the first hemorrhage during infancy, as father states when a spanking caused enormous extravasation about buttocks, back and extending into scrotum. The relatively same history repeats at different times during his life.

I saw case with Dr. Van Benschoten at about 2:30 p. m. on Wednesday, and the following history was presented: Very slight sore throat about two days previous, apparently a very mild catarrhal inflammation of left side. A doctor saw him and made an application to the throat. Patient stated that Tuesday evening he had had a slight pain in neck. Wednesday morning family called Dr. Van Benschoten, and stated that patient had begun bleeding during the early morning hours, probably between 5 and 6 o'clock, and that they were alarmed, owing to his rapidly increasing struggle for breath.

Patient's appearance at this time was cyanotic, tongue dark blue, forced firmly between teeth, which could only be opened three-quarters of an inch. Breathing very hard and forced. Under mucous membrane on inferior left side tongue was an enormous clot, extending posteriorly for about a finger's length. Neck, naturally small, was one-third larger than normal, and of even, rounded contour. Respiration being worse, Dr. Van Benschoten incised mucous membrane under left side of tongue and removed clots. Respiration improved rapidly. The surface thus exposed bled moderately, a constant oozing, even though firmly packed. In forcing tongue down in order to obtain a view of the throat, the doctor thought he could detect small amount of pus on left side. Could not determine its origin. Pulse at this time (8 a. m.) 80, and of good quality. Case about as described when I saw it at 2:30 p. m., with the exception of the tongue, which was darker, almost black, and the neck, which had become larger. It had the same even, rounded contour, but extended laterally to line drawn from under border of body of inferior maxilla down to shoulder, with outward slant at shoulder of about one inch. In other words, the neck was about twice as large as normal, with greatest bulging, evenly distributed, at sides. Bleeding about same as in morning, both when packing was removed in hopeless endeavor to see any bleeding points and when repacked with gauze moistened in epinephrin. Entire area one constantly bleeding field. The cavity was sufficiently large to easily accommodate two yards of gauze two inches wide. Pulse at this time (2:30 p. m.) 135 and of good quality.

Removed patient to Wesley Hospital. Had prepared fresh rabbit serum for subcutaneous injection, and also calcium lactate, to be given per rectum, with continuance of ice about neck.

Patient was sitting up in bed and was about as I saw him at first, with exception of pulse, which had increased to 145, when I stepped into the hall, just outside his room, to speak to the father. After standing there for a few minutes the nurse hurriedly called me and, returning, I found patient very blue, without any noticeable respiration, and no heart sounds. We endeavored to force mouth open and tongue forward while waiting for a knife, but to no avail. Did tracheotomy and continued artificial respiration, but without success. Trachea was perfectly clean.

CHICAGO OPHTHALMOLOGICAL SOCIETY

Regular Meeting, Dec. 18, 1911

A regular meeting was held, Dec. 18, 1911, with the president, Dr. H. W. Woodruff, in the chair.

TREATMENT OF CORNEAL ABSCESS BY AN OLD-TIME SURGICAL
PROCEDURE

Dr. H. B. Young, Burlington, Iowa, reported the case of a woman, aged 40 years, who, during a convalescence from small-pox, contracted an abscess of the

cornea. Conservative measures failed to give relief, and even the actual cautery did no more than control the trouble for a few days. Curettage and the application of 95 per cent. phenol gave only temporary relief. Finally, he made a crucial incision as for carbuncle, and applied the phenol thoroughly. Convalescence promptly followed. The resulting scar is small and thin.

A CASE OF AMBLYOPIA OF OBSCURE ORIGIN

Dr. Young also reported the case of a man, aged 46 years, whose vision became dim following an attack of gripe. The right eye is weaker than the left. Tension is normal; there is no tenderness nor inflammation. Form fields are not restricted, but the color sense is defective up to the point of abolition in the right. He had a venereal infection twenty years ago, but otherwise his history is negative. An intestinal toxemia suggested itself, but the case is indefinite.

DISCUSSION

Dr. J. E. Colburn has always had good success following the use of phenol with or without curettage, although he has never used the knife. He has found the actual cautery sufficient.

Dr. H. S. Gradle stated that he found the nerve in the amblyopia case absolutely white, as in a primary nerve atrophy. In the retina and chorioid are minute white areas, as in a retinitis punctata. Here and there these areas are coalescent. They occur mainly at the side of the blood vessels, and are scattered throughout the disk in the macules, in a circular fashion.

Dr. Young stated that while the nerve looks whiter than one would expect to see it, he could not make a diagnosis of atrophy without some limitation of the form field. The man probably had a venereal infection which was more extensive than would appear, and he thought that there might be developing a secondary cerebral disturbance:

In regard to the abscess of the cornea, he believed that when the lesion is more or less burrowing in character, curettage is a very unsatisfactory treatment. One must go through to the solid tissue, apply the phenol to the entire necrotic area, both the visible portion and the invisible portion under the edges, to get good results. He thought the treatment was much less radical than a Saemisch section.

NYSTAGMUS

Dr. Eugene R. Lewis, of Dubuque, Iowa, discussed the physiology of nystagmus and also its significance as a symptom in disease. He recognizes a vestibular, a cerebellar and an ocular type. Regarding the latter, he has evolved a new theory concerning the development of the symptom. He holds that as cerebral development proceeds, cerebral activities increase, and the increasing activity in the oculo-motor centers not being checked by inhibitory cortical impulses finds expression in nystagmus of the ocular type. This nystagmus is undulating, uninfluenced by the usual voluntary eye movements, does not cause apparent movement of fixed objects, and is always associated with low visual acuity.

DISCUSSION

Dr. Clark W. Hawley called attention to a singular coincidence of hereditary nystagmus. All of the boys in the families of all of the sisters have nystagmus. None of the girls in the families of the sisters have nystagmus. There are five sisters who have boys and girls. In the families of the brothers of these sisters there is no evidence of nystagmus.

Dr. George F. Suker did not agree with Dr. Lewis as to the origin of ocular nystagmus. It might, he said, be caused by defects, such as those he mentioned, but there undoubtedly is a pure ocular condition of nystagmus which he did not mention and which might be classified as a pseudo-nystagmus, due to diseases of the central nervous system. It is not a complete nystagmus, seldom rotary, but always limited to one-half of the globe, and the eye swings from that position to the central line without crossing it. There is seldom a defective refraction media, but ocular disturbance is not associated with labyrinthine or cerebellar

disease. It comes on usually in the beginning of multiple sclerosis and senile dementia or general paresis, and is of great value from the diagnostic standpoint.

Dr. H. Walker has seen a case of purely voluntary nystagmus occurring in a man. There was no pathologic change in the eye, and no disease of the brain, the man being normal in every way. He asked Dr. Lewis in which classification he would put such a case.

Dr. H. W. Woodruff recalled two cases of that kind which had been presented before the Society.

Dr. Lewis stated that the condition Dr. Suker described would be more properly grouped under false nystagmus, for the reasons which he gave. The symptoms of this condition are sometimes of one kind and sometimes of another, but they are dependent on some deviation in the nervous mechanism, and the mere fact that it is the ocular muscles which are affected should not lead one to classify them in a category where they do not belong. As to what the voluntary control over the ocular muscles might mean, he was not prepared to say. One would have to know what the individual case was, because there might be some peculiar individual control over these muscles similar to the control of the ear muscles, but that does not necessarily mean that there is a chorea of the ear. In the development of nystagmus of the ocular type which one can recognize by the absence of apparent movement of fixed objects, that is not true of the kind of movements which Dr. Suker referred to, where the condition is of cerebellar origin. In movements of the eyeball without apparent subjective movement of the fixed objects, it is difficult to give an explanation for it. The only way one can grasp this is by development. Instead of developing in the sensorium or a point in the retina, you develop a line in the retina.

CASES OF TRACHOMA TREATED BY THE JEQUIRITY METHOD

Dr. Clark W. Hawley reported four cases of trachoma treated with jequirity; one patient being presented before the Society. The results of the treatment in all cases have been good, in one case the result was most brilliant. In all cases the improvement continued for many months. The patient presented at the meeting was a woman, aged 30 years, who had had trachoma for a number of years and had been treated by a number of oculists in the usual way with but little success. When first seen there was an extensive bi-lateral pannus and a number of trachomatous ulcers of the left eye and one large ulcer in the center of the right cornea.

Dr. Hawley usually treats the eye about 5 o'clock in the evening so that by the following morning some results are observable. If no inflammatory condition is manifest the jequirity is repeated the next morning. The lids are enormously swollen and the discharge very profuse. Great care is taken in washing the eye thoroughly every hour; at first applications of cold for about twenty-four hours and then applications of hot water for two hours about twenty minutes at a time until the swelling and inflammation has subsided. The subsidence of the inflammation and swelling continues for about a week and at the end of another week the lids are practically normal, the cornea becomes quite clear and the improvement in vision was commensurate with the result.

MICROSLIDES OF TARSAL CONJUNCTIVA TRACHOMA

Dr. L. N. Grosvenor presented slides of a typical trachoma follicle, a follicular cavity, the papillary form of trachoma, cystic mucoid degeneration and several cases of fibroid changes.

DISCUSSION

Dr. E. R. Lewis of Dubuque, Iowa, asked Dr. Hawley whether he would recommend the jequirity method in a case of persistent granular ulceration with vascularization of the cornea in a tuberculous youngster, 14 years of age, who had phlyctenules which have resisted every other kind of treatment.

Dr. George F. Suker has seen some of Dr. Hawley's cases and reported the results as being wonderful. He said that many years ago his chief had been in the habit of using jequirity in about the same way as Dr. Hawley used it, and

he had had many years of experience with trachoma. He never used the cold application until he thought there was sufficient swelling and inflammation to necessitate canthotomy, and he never thought he had a good result until he had a thick membrane of pseudo-diphtheritic type; in fact, the thicker the membrane, the better the result. Furthermore, if the inflammatory condition subsided inside of a week or ten days and the cornea was not clear, he again applied the jequirity. He applied it direct, so as to get a violent reaction, and therefore he never failed to get the pseudo-diphtheritic membrane. He insisted that the jequirity be washed before it was used. He never paid any attention to the corneal ulcer. It invariably cleared up nicely, and there was no fear of perforations. The thing to guard against is to get the jequirity pure. The bean is apt to be impure and contain substances which are dangerous. The impalpable powder is not irritating as a foreign substance. It readily absorbs the lachrymal secretion and becomes pulpy, while the foreign ingredients remain there as irritating bodies and cause a reaction which is not produced by the jequirity.

Dr. E. La Mothe has had quite an experience with the jequirity method in a clinic in Paris. An oculist in that city he thought, was the originator of the method, but he did at one time think of discontinuing its use because of several cases occurring in which he could not control the reaction. Perforation of the cornea followed. Dr. La Mothe thought it wise to follow the new method of Romer, who makes a solution of jequirity in three different strengths, beginning the treatment with a weaker solution and using the stronger if a sufficient inflammatory reaction is not obtained. He also uses a serum from an immune horse. With this serum he controls absolutely the most severe inflammatory reaction following the use of jequirity in from four to six hours.

Dr. Schneider inquired whether setting up an acute inflammation on top of the chronic inflammation was not the essential principle in the use of jequirity, and would any other substance which produced a like reaction answer the same purpose? The same line of treatment is followed in the case of a skin lesion where a chronic inflammation is converted into an acute inflammation, and then the latter is treated. He also inquired whether anyone had tried the use of the gonococcus for the purpose of setting up an acute inflammation? He thought that the jequirity method of treatment was too severe and he certainly would not allow anyone to use it in his eyes.

Dr. L. N. Grosvenor pointed out that the idea is to set up a phagocytosis, and therefore the more acute the inflammation, the better the result. In trachoma there is no phagocytosis, hence the necessity of setting up the acute inflammation, and that is the foundation of the jequirity treatment and of the acute gonorrheal infection.

Dr. Hawley said he did not have any experience with cases such as those mentioned by Dr. Lewis. If the patients were willing to submit to the treatment, he would do what he could. As to doing harm, he had not the slightest fear of losing vision. He does not try to control the inflammation; the more reaction, the better. The cold is used only to alleviate the pain and not to control the inflammation. In none of his cases has he had reason to worry because of the inflammation or excessive swelling. Only twice has he had to use the jequirity more than once, and then only because he did not use enough the first time. There has been no return of the trouble in the first case after five years.

A CASE OF INTERSTITIAL KERATITIS OF ACQUIRED ORIGIN

CARROLL B. WELTON, M.D.

PEORIA, ILL.

In ophthalmic practice interstitial keratitis constitutes about 1 per cent. of our cases. An analysis of these cases of the disease will show that inherited syphilis is the causative factor in about 66 per cent. and that a certain proportion of these varying from 2 to 10 per cent. are associated with the acquired form of syphilis.

In 1901, a member of this Society, Dr. Wilder, under the title of "Corneal Lesions in Acquired Syphilis" reported a case, the manifestations of which showed a striking similarity to the congenital type of interstitial keratitis. He urged at this time, in cases where no confirmatory evidence of inherited taint could be found, that careful examination should be made for the history and signs of acquired syphilis. Since then other observers have reported cases and among them, Davis calls attention to the small number of such cases in American literature—reports of only twelve having been presented up to that time (1908), and with the exception of the *Ophthalmic Record*, that not a single instance of the disease has been mentioned in half a dozen of the leading American ophthalmic journals.

When a patient presents to us a family history which is good, who personally has always had good health and upon whom no marks of inherited disease are present, yet the appearance of the corneal lesion shows a typical syphilitic disease and when improvement takes place after exhibition of anti-syphilitic treatment, then we must assume an acquired origin of infection.

The history of this patient is as follows:

Mrs. T., aged 19 years, consulted me Sept. 28, 1911, because of pain and failing vision in both eyes. These symptoms together with extreme photophobia and lacrymation, and with inability to use the eyes, had been present for a week. Sleeplessness on account of pain had been present for several nights. There was marked reflex blepharospasm and the eyes watered on the least exposure to light, which also usually induced sneezing.

Examination of the right eye showed ciliary congestion and a ground glass appearance of the cornea. In the deeper layers and extending throughout the whole cornea was a grayish infiltration, which with the aid of a loop was shown to be made up of numbers of grayish or creamy colored irregular spots, most of them connected with each other in a sort of meshed figure. Some small clear areas in the cornea were also present. In the superficial planes small cloudy areas of opacity were seen, some of them directly anterior to the more opaque deeper spots.

Vascularization of the cornea had been produced. Superficial vessels could be seen coming out from the limbus into the anterior planes and vessels extending into the posterior layers were present. The vascularization of the cornea of the left eye was not as far advanced as in the right eye although in this eye too, vessels were present in both the superficial and the deep layers.

In neither eye could the iris be seen and an accompanying iridocyclitis was evidenced by a number of tender areas over the ciliary region. With the ophthalmoscope only the faintest reflex was present in the right eye and in the left a slight reflex of the upper half of pupillary area could be determined. Details of fundus could not be seen. The anterior chambers of both eyes were deep and the tension was normal. Vision in right eye was hand movements at two feet, in left only hand reflex.

This patient says that her health has always been excellent, with the exception of two or three attacks of malaria. She has been married three years and has had one miscarriage without any apparent cause after a pregnancy of three months duration. She does not show the facies of inherited syphilis—the teeth being perfect and absence of cicatrices or enlarged glands. She has a tattoo mark on the left arm which was placed there about eight months ago.

The patient had a daily irregular temperature of about one degree for a period of two weeks after I first saw her and she was referred to an internist, Dr. George Parker, for an examination of the chest. The examination was negative. She was then placed in the hospital and given tuberculin subcutaneously three times in eight days in doses of $\frac{1}{2}$ mg., $2\frac{1}{2}$ mg., $2\frac{1}{2}$ mg. This test also was negative. Immediately after the first injection of tuberculin, however, she showed marked improvement in regard to her subjective symptoms—her pain, photophobia and lid spasm disappearing and she regained partial control of the lids. This improvement under injections of tuberculin, was most likely a coincidence, rather than due to any therapeutic effect of the tuberculin.

The sudden improvement, which apparently started at the time the injections of tuberculin were begun, may be explained in that the patient had been getting mercury by inunction daily for a period of three weeks.

The patient is the second youngest of a family of twelve children of whom eight are living. Two died in infancy, one at the age of fourteen months, the other living only a short time after birth. Two died from attacks of appendicitis at the ages of 23 and 25 years. Her mother has had one miscarriage. The mother when a girl of 15 years suffered an attack of some eye trouble, which involved but one eye and which reduced her vision until at this time it consists of ability to count fingers at four feet.

The living children are all robust and none have ever had any disease of the eye.

The treatment together with mercury referred to before, has consisted in protection of the eyes from light, the use of hot applications and instillation of solutions of atropin and dionin. Lately she has also been using the yellow oxid salve. Potassium iodid has been given internally.

Improvement, which began about six weeks after I first saw her, has continued until at this time, a zone of clear cornea is present extending all around in the periphery of each eye. This manner of clearing of the cornea, is of course identical with that which takes place in the inherited disease.

The points in this case which seem to me of interest are: That this patient has a negative family history. She also does not show any personal evidence of inherited disease and neither does she give a history of an acquired specific infection. Nevertheless in spite of this, she presents a typical corneal lesion of syphilitic character. The chances of her having acquired the disease are above the usual in that her moral tone and surroundings are bad.

Of course, it is admitted that other general disease processes, such as tuberculosis, malaria, influenza, etc., produce this same corneal picture, but these conditions in so far as this case is concerned can be disregarded.

Then again the prompt and marked improvement shown under the administration of antisyphilitic treatment points to the acquired form as the causal factor.

427 Jefferson Building.

DISCUSSION

Dr. Mortimer Frank did not regard the condition as being a rare one. As was pointed out by Dr. Wilder in a paper read before this society some years ago, the cases are not reported because the condition is not believed to be rare. He has had several cases, and has a patient under observation now—a young boy. Dr. Welton, he said, failed to mention whether a Wassermann test had been made. Although a negative result does not mean anything, a positive reaction is significant. The test should always be made.

Dr. Suker inquired how soon after the tuberculin injection improvement was noted; and how long before mixed treatment was begun.

Dr. R. J. Tivnen wanted to know what tuberculin test was used.

Dr. H. W. Woodruff thought that the point the doctor wanted to bring out particularly was whether this was a case of acquired or hereditary syphilis. He failed to see that the argument presented was in favor of one more than the other, because interstitial keratitis of the type described is common in hereditary syphilis and yet it is lacking in other essentials, so that it would be wrong to place the case in that category.

Dr. Welton, in closing, speaking of the rarity of these cases, said that they are rare only because they are not reported, but such cases usually occur in the very young. The discussion held at the time Dr. Wilder read his paper was to the effect that quite a few cases had been seen, but only twelve had been reported. Up to 1908 one hundred cases of the acquired form were reported in the literature. He did not make a Wassermann test in this case, because the patient could not afford to come to Chicago to have it made, and there were no facilities in Peoria for making it. As to the tuberculin, it was given three times, 0.5 mg.

the first time, 1.5 mg. the second time, and 2.5 mg. the third time, of the serial dilution Nos. 3 and 4, Mulford's preparation. The patient was in the hospital at the time and her temperature was taken every two hours for two days. The temperature was irregular, rising about one degree, but fell to normal during her stay in the hospital. The improvement in her condition occurred immediately after the third injection of tuberculin. There was neither local nor general reaction. As to whether the disease was inherited or acquired, he thought that if it had been inherited, the treatment given would have made her worse. The improvement in the case took place in such a short time, from September 28 until five weeks ago. When mercury is given in a case of inherited corneal trouble, the patient usually gets worse and not better. It was on the effect of the treatment in this case that the diagnosis of acquired syphilis was made.

THROMBOSIS OF ONE OF THE RETINAL VEINS PRESENTING A TYPIC PICTURE OF THE LEBER SPOT

Dr. George F. Suker presented a healthy, robust youth of 22 whose family and personal history were negative. While lifting a very heavy weight in a stooping position, one day, noticed after the day was over that his left eye was rapidly losing its vision. Within 24 hours practical blindness ensued. Ten days later he consulted Dr. Suker.

Status praesens.—Tension, external appearance, and pupillary reaction normal, media clear, vision faint; light perception. The disc suffused, particularly lower half, several pin points and flower shaped hemorrhages in immediate neighborhood also in lower quadrant towards temporal side. A band of apparently edematous retina extended from disc to macular area. The vessels were of practically normal caliber and outline, excepting that the lower retinal vein coursing towards the temporal region was enlarged and surrounded by a distinct haze. Apparently a serous effusion, not tortuous. Above the macular areas there was a typical and classic Leber spot in every particular; a moderate film of haziness surrounded the entire stillate spot.

Blood-pressure normal, no cardio-vascular lesion recognizable, frequent and careful urinalysis negative. Potassium iodid in ascending doses prescribed for three days. No improvement. Now deep local circulatory massage of the eye, through lid three times a day, five minute periods, followed by hot compresses, 2 hour periods, the iodid was reduced to 20 grains per diem. Improvement followed the second day of massage, fingers at 4 ft. or so. The vitreous now showed a minute haziness for several days, when it disappeared entirely.

No change in the treatment was instituted and on Oct. 27, 1911, vision with glass (—50 ax 180)=20/32—1.

The entire picture gradually cleared up—no vestige remains of the Leber spot. The nerve head is practically normal in appearance, the hemorrhages are all absorbed. The other interesting feature is that the patient has a large positive scotoma embracing about three-fourths of the lower field corresponding to the lesion, evidently caused by the Leber spot. His central vision to-day with the correction is 20/30, and he still complains of a moderate haze covering objects looked at. His large scotoma does not seem to annoy him greatly. The fact that one cannot detect "any visible" change in the chorioid or retina with so large a scotoma as a result of such a grave lesion on this is indeed worthy of note. Perhaps, thought Dr. Suker, changes may become visible later.

DISCUSSION

Dr. Major Worthington referred to a patient whom he exhibited two years ago, suffering from the same condition. The man was 51 years old; had 9/200 vision in left eye, and 20/20 in the right eye. Dr. Wood and several others who saw the case at the same time pronounced it one of thrombosis of the retinal vein. There was from 0.8 to 1.5 per cent. of sugar in the urine; no albumin at any time; specific gravity, 1.022.

Dr. H. W. Woodruff inquired as to how the eyeball had been massaged, and whether the improvement in the case was attributed to the massage?

Dr. Robert von Der Heydt inquired as to the possibility of using some drug which would dilate the peripheral vessels and thus favor absorption; amyl nitrite or nitrous oxid. This might be possible if the thrombosis was not too well organized. He thought that this would be better than giving potassium iodid internally for its mental effect.

Dr. Suker said that at no time did he find albumin or sugar in the urine. He was convinced that the massage and not the potassium iodid was responsible for the improvement, because he did not start the massage until three or four days after he first saw him, whereas the patient had been taking large doses of potassium iodid for some time, but noticed no improvement. The massage was given three or four times a day for four or five minutes at a time, and immediate improvement was noted. The dose of the iodid was reduced and the massage continued. His vision improved very much. He thought the suggestion of using amyl nitrite or nitrous oxid to open up the peripheral vessels in order to dislodge the thrombosis was a good one, but he did not believe it was feasible in his case, because the improvement under the treatment given was continuous, and no other measure was called for. However, he thought it would be an admirable procedure to use in cases where the massage did not give relief. Deep local massage directly through the lens administered with the pulp of the fingers or a pneumatic masseur will accomplish practically the same thing, namely, opening the peripheral vessels.

MONOCULAR RETINITIS PIGMENTOSA

Dr. A. A. Hayden reported the case of a man who presented this condition in one eye, the picture being typical of the four cases previously described in the literature. The interesting feature was that the man absolutely denied a syphilitic infection at any time.

DISCUSSION

Dr. Robert von Der Heydt called attention to the fact that another case of this kind was reported by Hans Reuter, in 1908, in the *Archiv für Augenheilkunde*. The patient was 65 years old, and had acquired syphilis thirty years before.

Dr. Suker wanted to know whether the irides had been examined with reference to whether the rugæ were present or absent, and whether by oblique examination there was apparent thinness. He asked this to eliminate positively a syphilitic infection. He thought that the man had a Romberg and an absent patellar reflex. He had an Argyll-Robertson pupil, but that, of course, did not mean tabes, although it is positive evidence of the fact that the spinal cord has been involved. This might happen in an early senile dementia, or in a multiple sclerosis. He has noticed in cases of syphilis of old-standing that the pigmented surfaces of the body elsewhere suffer loss of pigment, and this naturally would include the irides, and that these instead of being folded in appearance, show a peculiar flattening out. By oblique examination there is more or less absence of pigment, and if that is the case one might put down as an etiologic factor syphilis, together with marked arteriosclerosis, which is present in this case.

Dr. Hayden said that the case had not been transilluminated, but that the markings in the iris were normal. The irides were examined by himself and others and no changes were apparent.

FETAL IRIDOCYCLITIS WITH PROBABLE GLIOMA

Dr. E. La Mothe reported the case of a child, six months old, in whose left eye there was a pupillary membrane and seclusion of the pupil. The anterior chamber was very shallow; the tension of the eyeball normal, although two months ago it was minus 1; in the right eye, under slight dilatation, there was nearly total synechiæ, although there was a tumor projecting into the fundus near the ciliary body on the nasal side. The light color of the tumor led him to think it was a glioma.

CLARK COUNTY

The Clark County Medical Society met in annual session April 11, 1912, at the New Archer House, Marshall, Ill. Minutes of previous meeting were read and approved. Members present: Drs. Mitchell, S. W. and L. J. Weir, S. C. and R. H. Bradley, Prewett, Haslitt, Burnside, McCullough, Bruce, Marlow, Hall, Duncan, Rowland and Pearce. Dr. L. A. Burnside reported a "Case of Ectopic Pregnancy, with Complete History of Patient." Similar cases were reported by other members.

Moved and seconded that the Clark County Medical Society instruct their delegate to support that part of the proposed amendments that twenty delegates, representing not less than ten counties, shall constitute a quorum, for the transaction of business; also to support any move that will continue the privilege of councilors, ex-officio, the president and secretary of the State Society and chairmen of its standing committees a right to vote in the house of delegates of the State Society and to oppose other suggested amendments, as printed in July and April JOURNALS. Motion carried unanimously.

Moved and seconded that Clark County Medical Society meet, this year, every other month on the second Thursday, except the president and secretary are to change the days of meetings, if stormy or bad roads, to days when we have good roads, so that the doctors can go to meeting in autos, and that we meet as follows: Westfield in June, West Union in August, Casey in October, Martinsville in December and at Marshall in February and April. Motion carried unanimously.

Hard roads proposition discussed; moved and seconded that Clark County Medical Society endorse National Road as the proper way for the Ocean to Ocean National Highway and that the president appoint a committee to write resolutions to cooperate with other committees along same highway and do all in their power to help this movement along. Carried unanimously. Committee, Drs. Duncan, Haslitt and Bruce.

The paper on "Skin Diseases," by Dr. R. H. Bradley, brought out some good discussions. The following officers were elected: president, Dr. S. C. Bradley; vice-president, Dr. J. Y. McCullough; secretary-treasurer, Dr. S. W. Weir; state delegate, Dr. R. A. Mitchell; alternate, Dr. S. C. Bradley; censors, Drs. R. H. Bradley, Joseph Hall and L. H. Johnson.

Number of meetings during past year, four.

Name of members and number of meetings attended by each, during the year: Drs. S. W. Weir and J. Y. McCullough, 4; Drs. R. A. Mitchell, L. J. Weir, G. T. Rowland, L. H. Johnson, Joseph Hall, R. B. Boyd, R. H. Bradley and S. C. Bradley, 3; Drs. Edw. Pearce, W. W. Bruce, P. P. Haslitt, H. V. Anderson and J. W. Marlowe, 2; Drs. T. H. Lewis, D. L. Wilhoit, S. A. Smith, L. A. Burnside, G. W. Prewett and E. M. Duncan, 1.

Number of visitors present during the year, 7; largest attendance, 15; smallest attendance, 9; average attendance, 12.

At 5 p. m. society adjourned, to meet in June, at Westfield.

ECZEMA

R. H. BRADLEY, M.D.

The subject of skin diseases is a very large one, and as our time is limited I shall not undertake to name all of them, but have selected the one which is most common, as its victims comprise fully one-third of all persons afflicted with skin diseases.

Eczema: An acute, subacute or chronic, catarrhal inflammatory disease, characterized in the onset by the appearance of erythema, papules, vesicles or pustules or a combination of all these lesions, with a variable amount of infiltration and thickening, terminating either in discharge with the formation of crusts or in desquamation and accompanied by more or less intense itching and burning.

Symptoms.—It may begin as one or more slightly erythematous patches which soon show slight or moderate scalliness. It may begin as one type and soon change

to another. These are the several primary types of the disease; erythematous, papular, vesicular and pustular, and all cases of eczema begin with the presentation of one or other of these types. When the disease covers large areas of the body, the different types may be found in different parts of the body. It may be more or less general or limited to one or several regions; no part of the body is exempt. At different ages different regions show the disease much more frequently than others. In infants and young children the face and the scalp are most usually the seat of the disease. In some children it seems to be worst about the corners of the mouth, around the ears, the nostrils and corners of the eyes. In older persons who are working, the hands, face and arms are most commonly affected. The flexures of the arms and knees are often affected, and sometimes the axilla and genitalia.

The subjective symptoms of eczema almost always are troublesome, consisting of itching, burning, pricking, or stinging sensations, or a mixture of them all. Constitutional symptoms are never observed except in the acute gynecologic forms, and in the acute marked inflammatory and edematous eczema of the face, when there may be febrile and other symptoms. These soon subside.

Etiology.—Eczemas stand first in frequency among skin diseases for which advice or prescription is sought. It is met with in both sexes, and all ages. The age period perhaps most immune is from 6 to 15 years. Eczema can hardly be laid to heredity, from the data thus far obtained.

Blonds and florid skinned persons are more often sufferers from it than others, possibly on account of their skin being apt to be dry and thin. Whether eczema is contagious or not has been long discussed, but until recently was decided in the negative. This opinion still predominates largely. The presence of micro-organisms as the essential cause of this disease is not well established.

Constitutional Causes.—Any thing or condition which causes a depressed vitality and which interferes with proper assimilation and excretion is a factor in causing the disease. Rheumatic and gouty subjects are more prone to acquire this disease than others, possibly on account of their faulty or poor secretory functions. Digestive weakness and dyspepsia, which are usually accompanied by constipation, are very often the cause of eczema. Diet may therefore be said to be an important factor in causing these conditions which render the subject more susceptible to the attack of this disease. In a large number of cases no external cause can be found if one possibly does exist. Some cases are attributed to the excessive use of strong soap and water and chemical irritants of various kinds. Exposure to cold winds for a length of time often causes the disease.

Pathology.—The clinical evidence and the investigations of most observers point conclusively to the catarrhal nature of the disease. The process is distinctly an inflammatory one with the predominance of serous exudation, and is marked in all cases by hyperemia, serous exudations, usually also by blood-vessel dilatation and epithelial and connective tissue cell proliferation. The peculiar gummy or sticky exudation is made up chiefly of serum, and the fluid resulting from dropsical degeneration of the cells.

Diagnosis.—If the usual features are kept in mind, redness, thickening of variable degree, the often mixed character of the eruption, scaling or crusting, and often the fluid exudation of a sticky nature, the tendency to be confluent, and to form areas, along with the itching and frequent tendency to fissure, the diagnosis is not difficult.

Prognosis.—Eczema is in the majority of cases very obstinate, yet in most cases a cure may be secured if a proper chance is given to reach the desired end. But these cases are apt to return if the same conditions are allowed to arise as were prominent in causing the previous attack. I have often had them follow up a treatment until the most distressing symptoms, redness, swelling, itching, were relieved, then they thought they were well and dropped out of sight for a while only to return, saying their eczema had returned, when in fact it had never been entirely cured in the first place. Infantile eczema of the face and scalp is

usually very amenable to treatment, and if cared for properly does not return. In adults it is well not to be too positive about a rapid cure, but tell them it will take some time.

Treatment.—Experience has taught that both external and internal or constitutional treatment is required to give good results. The constitutional treatment must be made to suit each individual case. A very careful inquiry into the general health of the patient as to digestion, assimilation and excretion will enable the physician to make up his line of treatment. The condition of the bowels and kidney should be inquired into, also the diet in many cases is of very great importance. It is very necessary in these cases of eczema to have the bowels move freely, and as a general rule some of the saline laxatives are thought to be the best, or some of the saline mineral waters. Formerly arsenic in some form was considered the best alternative in the cases, but on careful observation it has been found in many cases to be an injury instead of a benefit. Some cases are benefited by it, as I have found in my own practice. I have had some cases which were benefited by the internal use of iodine in some form, but it requires close observation of its effects to see that it does not affect the stomach, and thus interfere with the digestion. In the rheumatic or gouty patients you will get good results by the administration of salicylates of soda, sodium bicarbonate, potassium acetate, colchicum, the salts of lithium or such other antirheumatic remedies as may suggest themselves. Eczema in infants is usually attributed to improper feeding, to digestive irregularities, and to constitutional debility. In these cases special attention must be given to the diet. Sometimes it may be necessary to add codliver oil to their treatment. See that your little patient is well nourished and the cure is half made.

External Treatment.—The first thing to accomplish is to free the affected part from the products of the disease. You will be governed by the appearance of the case. In some cases of recent origin you may be able to cure by local treatment alone if the general condition of your patient is good. If the affected part is very red and irritated do not apply strong soap and water, but use some oily dressing which will relieve the itching and burning, but if of longer standing and the diseased patches are covered with a thick crust or scab, I think that experience has shown that a free application of soap and water will remove this better than anything else. Then apply your dressing.

GREENE COUNTY

The regular meeting of the Greene County Medical Society was held in the Courthouse at Carrollton Friday, March 8, 1912. The following were present: Drs. E. G. Proctor, E. W. Fenity, Kane; F. H. Russell, Eldred; Frank Marsh, G. W. Ross, Jas. Squires, L. J. Hensler, E. E. Ehresmann, Howard Burns, Carrollton; H. W. Smith, Roodhouse; L. O. Frech, F. N. McLaren, G. W. Burns, A. W. Foreman, E. K. Shirley, H. W. Chapman, W. C. Day and H. A. Chapin, White Hall. Visitors: Dr. W. D. Chapman, Sylvis; Attorney Montgomery, Carrollton. The meeting was called to order at 2:00 p. m. by President Russell.

The following was offered as a substitute for Section 4, Article 2, of the constitution: The membership fee shall be the annual dues of the Illinois State Medical Society, plus 50 cents, payable at the time of admission. The annual dues shall be the same, and it shall be the duty of the secretary to draw on each member each year for said dues, and failure to honor such draft shall constitute dismissal from membership. The member so forfeiting his membership shall be reinstated only by unanimous vote of the society at any regular meeting. Any member absenting himself from the meetings for a period of one year without satisfactory excuse (to be decided on by the society) shall forfeit his membership.

The following substitution for Section 4 of the by-laws was also proposed: Papers announced in the program for the day shall have precedence of all others. All papers read before the society shall become the property of the society and be left in the hands of the secretary.

Dr. H. W. Chapman, the first on the program, was called upon and asked permission of the society to substitute for his paper a paper read by Dr. W. D. Chapman of Sylvis on "Infant Feeding." Motion made by Dr. Chapin and unanimously carried that the society hear Dr. W. D. Chapman, who then read a most interesting and exhaustive paper on "Infant Feeding" in which he laid great stress upon the use of modified cow's milk as a substitute for the breast when necessary.

Dr. W. C. Day's paper on "Suggestion as an Adjunct to Therapeutics," was, at his request, read by the secretary. The writer cited instances in which suggestion had been a most important ally and the writer believed that it should in all cases be of value in the treatment of diseases. The papers were discussed by several present but because of lack of time discussion was not as complete or as satisfactory as it otherwise would have been. Dr. Fenity was appointed censor pro tem. in the absence of Dr. Thomas. Censors reported Kane as next place of meeting with H. W. Smith, Howard Burns, H. W. Chapman and E. W. Fenity as essayists.

H. A. CHAPIN, Secretary.

Special Meeting, April 19, 1912

A special meeting of the Greene County Medical Society was held at White Hall, April 19, for the purpose of electing a delegate to the State medical society, and conferring with the councilor of District No. 6. Meeting was called to order at 12:30 by the vice-president, Dr. Frech. Members present: Drs. J. W. Adams, E. E. Ehresmann, L. J. Hensler, Frank Marsh, Howard Burns, Carrollton; E. H. Higbee, Roodhouse; H. W. Chapman, H. W. Hand, L. O. Frech, G. W. Burns, F. N. McLaren and H. A. Chapin, White Hall. Visitors: Dr. C. E. Black, Jacksonville; Dr. DeCoursey, Patterson. Upon motion of Dr. Marsh, H. A. Chapin was elected delegate and F. H. Russell alternate. There being no further business to transact the society adjourned for dinner.

Meeting was called to order at 2 p. m. at the Vitagraph Theater and Dr. Black gave an address on "Displacements of the Colon," illustrated with stereopticon views, showing many drawings and pictures of the x-ray photographs. The paper was a most interesting and instructive one.

On motion of Dr. Adams the thanks of the society was unanimously tendered to Dr. Black. The paper was discussed by many present and Dr. Burns of Carrollton reported a most interesting case of obstruction of the colon, after which the society adjourned to meet the second Friday in June.

H. A. CHAPIN, Secretary.

JERSEY COUNTY

The fifty-fifth annual meeting of the Jersey County Medical Society was held at the Court House in Jerseyville, April 8, 1912. Dr. A. K. Van Horne presiding. Dr. Van Horne relinquished the chair to Vice-President Titterington. Dr. H. R. Bohannon acted as secretary pro tem, Dr. Grimes, the secretary-treasurer, having removed to Chicago. Minutes of the previous meeting were read and approved. Dr. Van Horne read a paper giving a brief history of the Jersey County Medical Society, also presenting his resignation as president, which resignation was not accepted by a unanimous vote. The election of officers for the ensuing year resulted as follows: A. K. Van Horne, president; M. B. Titterington, vice-president; A. M. Cheney, secretary-treasurer; M. B. Titterington, delegate to the annual meeting of the Illinois State Medical Society, and Dr. A. K. Van Horne, alternate. The president appointed Drs. M. B. Titterington, H. R. Bohannon and N. F. Bray as censors for the ensuing year. Members present: Drs. A. K. Van Horne, M. B. Titterington, A. A. Barnett, H. R. Gledhill, H. R. Bohannon, A. S. Hunt, N. F. Bray and A. M. Cheney. Dr. Bray moved that adjournment be made to the Colonial Hotel at which place the members of the society were the guests of the president, Dr. A. K. Van Horne.

The society reconvened at the Court House at 1:45 p. m. Dr. Carl E. Black of Jacksonville addressed the members on society topics, importance of organization, attendance, and the value of membership to the practitioner. Dr. Black also

spoke of two cases of intestinal obstruction with anomalies of the intestine, the symptoms of one including constipation, the other diarrhea, impressing also the value of the x-ray in diagnosis. Dr. Titterington described the preparation of the patient for the "skiagraph," patient in knee chest position, while the solution of bismuth bicarbonate is slowly injected into the colon. The nurses who called and attended the remainder of the meeting were Misses Kirkpatrick, Utt, Ford and Edwards. Dr. Bohannon read the report given by Dr. Van Horne on the latter's grandson, an old injury to the head; operation by Dr. J. B. Murphy; good results.

A vote of thanks was extended to Dr. Black for his instructive talk. A vote of thanks was also extended to Dr. Van Horne for his hospitality and courtesy.

On motion of Dr. Bray adjournment was taken until the regular meeting in May.

LAKE COUNTY

A meeting of the Lake County Medical Society was held in the office of Dr. L. H. Tombaugh, Waukegan, Ill., 4 p. m., April 15, 1912. In the absence of the president and vice-president, Dr. M. E. Fuller, of Wauconda was elected chairman of the meeting. The secretary's report was read and approved. Several communications to the society were then read including one concerning an appropriation to be asked for the medical department of the University of Illinois. It was the consensus of opinion of the society that the secretary correspond with President James for further information on this matter, but the feeling was that they did not approve an appropriation to the University for a medical department to be built at Champaign or Urbana, because of the lack of clinical material to carry on the work of the last two years of medical work. Dr. F. M. Barker then talked on the subject of the need of a well paid health officer to devote all his time to Waukegan's health. Dr. Barker's remarks showed that he had made a careful study of the subject and his comparative figures and arguments were strong and convincing. He brought out the fact that the city of Waukegan now spends about \$22,000 for police and fire protection for ten million dollars worth of property, while they spend but \$300 for their health protection which, at the average value of \$5,000 per life, would be valued at one hundred million dollars. He also brought out the idea that notwithstanding the excellent work of our last two health officers, that they could not be expected to do the work that a city of this size should have done for the protection of our health; that the only solution of the problem would be the employment of a special trained health officer given full police power to act on all matters pertaining to the good health of our city; that he be given sufficient remuneration so that he could devote his whole time to this work and not have any general practice. The Doctor's remarks were applauded by every physician present.

This was followed by a paper by Dr. Watterson on the same subject. Besides the facts brought out by Dr. Barker, statistics for the year 1910 were read showing an increase of 20 per cent. in the death rate over 1909, against a decrease in death rate in all other cities in the county except Zion City and North Chicago. He did not think that there was a physician in Waukegan competent to do the work of health commissioner and that it needed special training which could only be had either in some health department like Chicago or Milwaukee, or in courses now given by universities on the subject. Dr. G. Windesheim of Kenosha then gave a talk on the subject. He informed us that they were now in the midst of reorganizing the health department in Kenosha and that they were about to employ a man to devote his whole time to the health department work of their city. He believed that such a man could bring about results like that recently had in La Crosse, Wis., where a scarlet fever epidemic which started in with five cases reported and increased to fourteen within four days, was promptly attended to by their health commissioner in a scientific way, thus stopping the spread of the disease so that only three cases followed; the common cause being traced to a milk route which was shut off and no more scarlet fever has been

heard from at La Crosse. This he spoke of as an epidemic being treated in a scientific way and compared it to a similar epidemic started about the same time in his own city which has been dragging on all winter until over 200 cases have been reported thus far, and it has taken a most virulent course, where one to three members of a family have died within a few days. La Crosse employed a well trained man to look into the cause of disease; Kenosha does not. The doctor especially brought out the fact that such a man should be totally out of politics, at the same time it took very careful ties with the city dads to get a proper ordinance through so as to have such a man employed.

The matter of taking action by the society on this subject was left to a committee to be known as the Public Health and Legislation Committee. Upon this committee the chair appointed Drs. J. C. Foley, F. M. Barker, and W. H. Watterson.

The society then voted on delegates to the state society. Dr. M. E. Fuller, of Wauconda, was elected delegate. Dr. W. C. Bouton, alternate.

The meeting then adjourned.

W. H. WATTERSON, Secretary.

M'LEAN COUNTY

The McLean County Medical Society held its regular meeting in March, in the Y. M. C. A. building, Dr. W. K. Newcomb, president of the State Society being the guest of honor. A short business session was held, and as the president and vice-president were both absent, Dr. W. E. Guthrie was elected president pro tem. The board of censors reported favorably on the application of Dr. George B. Kelso, and on motion the report was accepted and Dr. Kelso unanimously elected to membership. An elegant dinner was prepared for twenty-five doctors, as more than that number had promised the secretary that they would be present. Eight of the twenty-five who agreed to be there were there, and five unexpected members, making thirteen who met the doctor at the festal board; one member who promised to be there was professionally hindered and sent the money for his dinner; we would name him but we know him to be modest. So there was a deficiency to be paid out of the general fund. Are doctors' promises like pie crust, made to be broken? Or were there seventeen doctors all so busy that they couldn't come? At the last banquet where the money was collected in advance, there were forty-two tickets sold and thirty-nine sat at the table. We leave you to draw your own conclusions.

After dinner Dr. Newcomb gave a very pleasing and instructive address on "The Present Needs of the Profession." The doctor has furnished us a liberal extract of his address for the *Bulletin*.

The president has appointed the following committees: Nominating, Drs. W. W. Gailey, A. W. Meyer and E. L. Brown; Auditing, Drs. F. C. Vandervoort, J. L. Yolton and M. F. Savage.

Dr. Newcomb dealt at some length with the movement for higher medical education. He claims that the propaganda for higher education has already done a great deal of good. It has reduced a number of medical schools all over the United States and has brought about the consolidation of a good many of the weak ones, thereby developing a stronger and better institution. He does not think there is any need to worry as to creating a medical aristocracy on account of the high grade of requirements and the probability that in a short time a literary degree will be a necessity for entering on a medical course. There is no likelihood of eliminating the "poor boy" as the poor boys now have better opportunities in getting an education than they had in the years gone by and he recognizes the claim that it is doubtful philanthropy to send a poor boy to a poor school simply because it is cheap. The doctor dealt at some length with the Owen Bill, and believes that while it does not eliminate all our medical troubles, it will nevertheless be an entering wedge. It will eventually bring about the changes desired. He takes the ground that medical standards and medical licensure should originate with the Department of Health.

This arrangement should guarantee a universal standard for the whole country. The question was raised whether the medical profession were doing all that was desired to be done in the matter of support of the bill. It should receive the unanimous support of the profession as being the best measure offered up to this time. Of its beneficence as a measure for the good of the laity there can be no doubt. Present indications seem to favor the passage of the bill.

The following officers were elected at the annual meeting of the McLean County Medical Society: president, Dr. Wilfred H. Gardner, Bloomington; vice-president, Dr. Edson B. Hart, Bloomington; delegate, Dr. John M. Fenelon, Bloomington; alternate, Dr. Edw. E. Sargent, LeRoy.

The annual meeting of the McLean County Medical Society was held in the Council chamber Thursday, April 4, 1912, at Bloomington, Ill. The president and vice-president being absent, Dr. E. E. Sargent of Le Roy was elected to preside. Minutes of the February and March meetings were read and approved. A resolution directed to the Board of Education endorsing the regulated playgrounds for children was adopted. The report of the secretary-treasurer showed eighty-three members in good standing, and a balance of \$93.55 in treasury and the same was approved by the auditing committee.

The election of officers for the ensuing year resulted as follows: president, Dr. Wilfred H. Gardner; vice-president, Dr. Edson B. Hart; secretary-treasurer, Dr. Thomas D. Cantrell; state delegate, Dr. John H. Fenelon.

Under report of cases Dr. W. E. Guthrie exhibited the pyloric one-third of a stomach removed from a woman aged 53 years. It was the seat of a carcinoma extending entirely around it and almost completely occluding the pyloric opening. The specimen showed one-half inch of healthy duodenum on one side of the growth and three-fourths inch of healthy stomach on the other. The doctor briefly described the operation. He entirely closed the severed end of the duodenum and made a posterior gastro-enterostomy to furnish an exit from the stomach. After the necessary turning in of the flaps to make a closure had been made a stomach of about one-half its former capacity remained. The operation had been done about two days before; the patient had reacted nicely from the shock of the operation, there had been no nausea or vomiting and she promised to make a complete recovery. Whether it would be permanent, time alone will tell.

Dr. F. C. Vandervort read a paper on "Anesthesia," and Dr. E. B. Hart read a paper on "Prostatic Hypertrophy." Both papers are worthy of special mention and were thoroughly discussed by the society which was largely attended, nearly forty doctors being present. The meeting was harmonious and instructive.

MADISON COUNTY

The Madison County Medical Society met in Collinsville April 5, 1912, with the president, Dr. E. C. Ferguson in the chair. Present: Drs. Oliver, Smith, Oatman, Burroughs, Ferguson, Harrison, Siegel, Sims, Luster, Wadsworth, Barnsback, Pfeifferberger, Hastings, Wahl, Robinson, Hirsch, Spitze and E. W. Fiegenbaum. Visitors: Ben Harrison, medical student, and Mrs. B. Harris and Miss May Mayer, registered nurses. All proposed amendments to the state constitution and by-laws, except the one offered by Dr. Zurawski, were adopted.

Dr. Lay G. Burroughs read a very able paper on "Medical Ethics." It met with the hearty approval of all who discussed it and was an excellent résumé of this mostly timely subject.

E. W. FIEGENBAUM, Secretary.

ROCK ISLAND COUNTY

The annual meeting of the Rock Island County Medical Society was held at the New Harper Hotel, Tuesday evening, April 9, 1912. Minutes of the February meeting were approved as read. The application of Dr. John A. Ross, Moline, was reported favorably and he was unanimously elected to membership. The secretary read a communication from Dr. J. A. Egan, secretary of the State Board

of Health, regarding A. C. Solberg, a chiropractor practicing in Rock Island without a license. The State's attorney was ordered to bring suit against him. The annual reports of the treasurer, A. T. Leipold, and the secretary were read. A communication from the Council on Health and Public Instruction of the A. M. A. was read, asking the society to appoint a committee to cooperate with the Council. After some discussion the matter was ordered laid over. The annual election resulted in the following, all unanimously chosen: president, Dr. E. Sargent, Moline; first vice-president, Dr. W. D. Snively, Rock Island; second vice-president, Dr. F. B. Clarke, Watertown; secretary, Dr. W. D. Chapman, Silvis; treasurer, Dr. A. T. Leipold, Moline. The retiring president, Dr. W. L. Eddy, Milan, was made delegate to the Springfield meeting, May 21-22-23, 1912. Dr. J. R. Hollowbush, alternate.

A rising vote of thanks was given the retiring officers. Present: Drs. Sala, Ludewig, Snively, Chapman, Leipold, Ross, Williams, Clarke, Craig, Lachner, Sargent, Hall, Eddy, Sounders, Wright, Norman First, Hollowbush, Mueller. Visitor: Dr. F. J. Otis, Moline.

ALBERT N. MUELLER, Secretary.

SANGAMON COUNTY

The following is the program of the Sangamon County Medical Society which held its monthly meeting on the evening of April 8, 1912.

PRESENTATION OF CLINICAL CASES

"Inflammation of the Aorta," G. F. Stericker, Springfield; "Complete Dislocation of the Astragalus, Without Fracture, Accompanied by Infection of the Ankle," I. W. Metz, Springfield; "Suture of the Facial Nerve to the Spinal Accessory Four Weeks Ago; Suture Material for Abdominal Surgery," T. J. Knudson, Springfield; "Sarcoma of the Shoulder," D. M. Ottis, Springfield; "Demonstrating the Value of the Cystoscope as an Aid to Diagnosis," J. W. Kelly, Springfield; "Brain Tumor," G. N. Kreider, Springfield; "Acute Miliary Tuberculosis," S. E. Munson, Springfield.

VERMILION COUNTY

At St. Elizabeth Hospital, Danville, Ill. March 11, 1912, the Vermilion County Medical Society held an all day clinic, a number of the surgeons presenting cases which they operated on. The ten major operations performed are recorded below as far as reported by the surgeons who had the cases in charge. It was the most interesting and profitable clinic we have ever held. At 9 a. m. everything was in readiness in the operating rooms and a goodly number of the physicians present. The fact that the gentlemen of the profession came early and stayed throughout the day and evening is sufficient evidence to prove we are going to repeat the day as frequently as is possible to do so. There were some very interesting and unusual cases presented. The operating was finished at 7 p. m.

The members then went directly into the banquet hall arranged by Sister Constance and her co-workers, assisted by outside friends. The banquet, served to approximately fifty, was a four course menu of many good things. After the banquet Dr. J. M. Guy complimented the sisters upon the spirit and motive accompanying the hospitality shown the profession and moved that a vote of thanks be extended to them. The motion was seconded and a rising vote taken.

The banquet was followed by a smoker. After the smoker President Russel called the society to order in the recitation hall.

The secretary with the minutes of the previous meeting was not present, consequently Dr. Steely was asked to act as secretary pro tem until the secretary arrived. The first thing in order was the presentation of cases. The first was presented by Dr. J. G. Fisher. A case of glandular enlargement, the history showed it to be chronic. Diagnosis, probably tuberculous.

The second case was presented by Dr. Robert Clements. The case had a history of mine accident in which instance the cage fell, resulting in chest and epigastric symptoms. It was found that the lower lobe of the left lung was diseased. No T. B. found by microscope nor does he react to the von Pirquet test. The third case was presented by Dr. Robert S. McCaughey, a case of gastric neurosis. Dr. McCaughey recited ten questions that should be asked such cases and elucidated their significance. Dr. C. H. Evans presented a patient showing secondary syphilitic lesions. The minutes of previous regular meeting were read and approved.

The name of Dr. J. H. Lagrange was voted upon and rejected, because he is not in active practice, and because a satisfactory history of his past professional life could not be obtained. A vote of thanks was extended to the surgeons and others who were instrumental in making the day a success.

A motion was passed to have the secretary write the editor, John Harrison, of the *Evening Commercial News* of Danville, expressing the appreciation and good feeling the society extends to him because of the bold and frank attitude taken against "Bill Smith, Faith Healer" of St. Elmo.

A motion was carried to appoint a committee to write suitable resolutions expressing the gratitude of the society for the entertainment given by the sisters and their assistants.

Committee, Dr. Barton, Dr. Guy and Dr. Cooley.

Adjourned.—Number present, 48.

SOLOMON JONES, Secretary.

CLINICAL CASES

CASE 1.—A. E. Female, aged 33 years; occupation, house work. Has been married. Has had no children. Family history, negative.

Present history. Present trouble began five years ago without any attributable cause. Began to feel as if everything in pelvic region was going to come out. With this feeling backache between hips. Headache on top and posterior; nervousness, indigestion, when small amount of food is taken stomach feels very full. No active pain or burning in epigastrium. No difference as to kind of food; there is no relief from eating, otherwise hunger pain, no relief from alkalies, acids make more comfortable. Always feels better with stomach empty. Also relieved by eructations of gas. Never had any severe or sudden colicky pains in abdomen, but does have a dull pain occasionally under the right shoulder blade, and pain of constrictive nature in epigastrium. Constant dull aching pains in lower abdomen extending into either hip. Occasional sick headache; constipated for years.

Menstrual period began at 18 years, every twenty-eight days; three days type, small amount, light red; severe cramping first day, better after flow started.

Four years ago began to suffer severe backache and headache with heavy bearing down feeling in female organs, as though everything would come out. Has had leucorrhea. No metrorrhagia. No urinary trouble. Has lost 15 pounds in last six months, no cough and no shortness of breath.

Physical Examination.—Tongue has thick yellowish white coating. Tonsils slightly enlarged. No palpable thyroid. Heart and lungs negative. Liver and spleen dullness normal. General rotundity of abdomen, general sensitiveness over whole abdomen (probably neurotic); seems a little tender at 9th right cartilage; has no Mayo Robson, Moynihan, Ewald, Boas or Murphy signs. Appendix more sensitive than usual. Sensitiveness very marked across pelvic inlet.

Vaginal Examination.—Perineal body good. Color of membrane normal, some white discharge externally. Cervix has tenacious mucus extruding, and mouth reddened. Uterus slightly enlarged, little soft, movable fundus in cul-de-sac. Cervix points downward and forward. Some thickening of broad ligaments, left ovary tender and slightly enlarged, left tube does not roll freely under fingers. Right ovary enlarged. Tube answers description of left except does not move under examining fingers. Other examination negative.

Differential Diagnosis.—We have here a patient somewhat neurotic, 33 years old. Complaints of indigestion, headache, backache, nervousness and constipation. What is causing this? The patient at one time felt well. We might think of chronic cholecystitis, duodenal ulcer, chronic appendicitis or conditions of the appendix with uterine retroversion, adhesions and cystic ovary might account for it.

She has pain of constrictive character in the epigastrium and a bloated full feeling after eating, relieved by belching and feeling better on an empty stomach. But she has the negative findings in physical examination and she does not have that "catchy respiration" that usually goes along with constrictive feeling in epigastrium, therefore we do not expect to find any cholecystitis.

If she had duodenal ulcer, she would have the peculiar hunger pain, relieved by eating or drinking an alkali; especially would these pains come in the night and before meals, and we would have evidences of hyperacidity, usually, which we have not.

Therefore we do not expect to find ulcer. Her appendix is entirely too sensitive; it must be causing some trouble and could cause the digestive symptoms, so we expect to find some trouble with the appendix. The female relations with retroversions, adhesions and cystic ovary could also cause trouble.

Operation by Dr. R. L. Hatfield, assisted by Drs. Baumgart, Gunderson and Fairhill. Median incision below umbilicus. Gall-bladder examined, found to be negative, the walls thin and empties easily, stomach and duodenum negative. Uterus retroverted, ovaries both cystic and tubes and ovaries bound down by adhesions. Upon the right ovary posterior was found a small papilloma, also on post surface of uterus. Both ovaries and tubes removed. Vento suspension by shortening ligaments behind uterus (Baldy). Appendix found to contain several concretions and was removed. Colon was markedly prolapsed. Abdomen closed in layers.

Pathologic report by Dr. J. G. Fisher, Danville, Ill.

Cystic degeneration of both ovaries, papillomas on uterus and right ovary were undoubtedly beginning malignancy.

R. L. HATFIELD, M.D.

CHOLECYSTITIS

CASE 2.—Julia B.; aged 37 years; married; housewife, Family history, neg. Personal history negative until ten years ago when she had a large ovarian cyst removed from the right side, from which recovery was good; typhoid fever four years ago; sick seven weeks.

January, 1912, I removed a fibroid from the uterus and the left ovary, which was about the size of an egg and cystic. At this time, the gall-bladder was full and very hard to empty, but the patient was doing so poorly under the anesthetic, I did not drain the gall-bladder. She made a good recovery from her pelvic symptoms of severe pain and profuse hemorrhage, but the gall-bladder symptoms grew worse. She complained of severe pain and tenderness in the right hypochondrium, frequent, severe vomiting of dark green bile; pain in back between the shoulder blades, severe constipation, accumulation of gas and slight fever. On examination the abdominal wall was rigid and tense, the skin was of a sallow color. After opening the abdomen, found a small gall-bladder with several adhesions, filled with dark, thick bile and with walls thickened. The pancreas was enlarged and hard; no stones were found; a drainage tube was put in the bladder and its edges inverted. The drainage has been profuse and is clearing up, but not of normal color at this date, twelve days after operation.

A. E. DALE, M.D.

CASE 3.—Mrs. N.; aged 38 years; housewife, residence, Danville. Had tuberculous glands of the left side of neck when a baby; glands began to enlarge on the right side of neck about ten years ago and for the past six months they have increased nearly twice the size. Temperature, normal; pulse, 78; urine, negative. Anesthetic to be used in this case, one hour before the operation hypodermic injection of scopolamin gr. 1/100. morphin sulphate gr. 1/6. Anesthesia will be begun with gas and oxygen, followed by the drop method of ether.

Operation.—The anesthetic of gas and oxygen was begun on this case, but owing to an undiscovered break in the tube between the mouth-piece and the gas bag, the patient acted badly and did not receive the full benefit of the anesthetic. Ether was given to complete the operation. An incision about $2\frac{1}{2}$ inches long about an inch below the inferior maxilla on the right side, running parallel to it, was made. The skin and platysma myoides muscle were incised and the deep fascia opened, allowing us to make a dull dissection of the tumor mass. Most of the dissection was made with blunt pointed scissors and the fingers, it being necessary to tie off only two small arteries and the small branch of the external jugular vein, when we were able to shell out the mass in its entirety. The deep muscles were drawn together with an interrupted and the fascia with a continuous catgut suture; the skin incision was closed with metal clips, putting a small gauze drainage in the angle of the wound. A microscopical examination of the tumor proved it to be a benign lymph-adenoma; the size of the tumor was about 3 inches long and two and one-half inches in diameter.

STEPHEN C. GLIDDEN, M.D.

CASE 4.—Miss F., Danville, Ill., aged 12 years, school girl. American. Family history negative. Previous diseases, measles, chicken-pox. Has never menstruated. Present trouble, mother says the girl has had pain on and off in the right side since she was 4 years old. During the last six months I have seen her in two different attacks. Pain would come on suddenly, followed by nausea and vomiting. The pain, general at first, would become localized over the right inguinal region. Constipation is present.

Physical Examination.—Temperature, 99 to 100. Pulse, 80 to 100. Respiration 24. Extreme tenderness over McBurney point. Hartman's sign present on right side. Right leg drawn up. No mass palpable. Lungs and heart normal. Urine normal. Blood examination: reds 4,600,000, whites 9,000. Diagnosis: Recurrent appendicitis.

Operation at St. Elizabeth hospital, one week after beginning of last attack by H. F. Hooker, M.D., assisted by Dr. Tennery; anesthetic by Dr. Jones. Incision through right rectus; appendix delivered through incision. Signs of inflammation everywhere still present, vessels hyperemic and a few fresh adhesions around base. The base of the appendix was crushed, ligated and removed. Stump was cauterized. I don't use the old circular pursestring for inverting the stump. I start to the right of the upper side of stump, opposite mesenteric attachment and dip gut three to four times, then start on mesenteric side of stump directly below starting point above and parallel with row above. This leaves free ends of ligature on opposite side of stump.

Bring these ends together and tie. No need to press down stump; as the ends are tightened up, the stump will have to become inverted. It is a very simple procedure and much quicker than the old circular method. The ligature on the mesentery is now drawn across and tied to the inversion ligature, thus covering up all raw surface.

Remarks: From the history given of repeated attacks we expected to find many dense firm adhesions. The old adhesions were free showing that little or no exudate was thrown out during the many inflammatory attacks and resolution had taken place each time without leaving its earmarks. The pressure of several large fecal concretions seemed to be the principal etiologic factor. Sutures out eighth day; patient left hospital on 9th.

H. F. HOOKER, M.D.

CASE 5.—Mrs. T., aged 28 years. Family history unimportant. Had the ordinary diseases of childhood including diphtheria; small-pox at the age of 19; Gave birth to child at the age of 16, confinement being normal but tedious; convalescence uninterrupted; two abortions since birth of child. Present trouble began with pain in ovarian regions five years ago following an abortion. She has complained of pains in pelvis, back and legs, occipital pain, nervousness and profuse menstruation lasting from seven to eleven days.

Physical examination revealed a mitral regurgitant murmur, puffiness of face and shortness of breath. Uterus was retroverted, slightly movable and a little tender and tenderness in each ovarian region.

Operation, March 11, 1912. Abdomen was opened and the uterus found deep in pelvis with ovaries and tubes in a mass posterior and lateral to uterus indicating a chronic inflammatory process.

The ovaries were large and cystic, the tubes were tortuous and the fimbriated extremities closed and adhered to the broad ligament. Ovaries, tubes and appendix were removed and the abdomen closed. Stitches removed seventh day and patient left hospital eighth day.

GEO. W. FULLER, M.D.

CASE 6.—Mrs. S., aged 75 years, farmer's wife. Carcinoma of lower lip. Eight months ago patient noticed small sore on the muco-cutaneous border near the center of lower lip. This gradually enlarged. At time of operation this sore was covered by a dark crust about the size of a dime. Slight infiltration of lip around sore. No involvement of lymphatics could be felt but their removal was thought best to prevent a return of the growth in them.

Operation by Dr. H. S. Babcock, Dr. C. E. Wilkinson, assistant, Dr. H. F. Becker, anesthetist. An incision was made through the skin and platysma an inch and a half below the lower jaw extending from sterno-mastoid muscle on one side to sterno-mastoid muscle on the other side, and all the submaxillary chain of lymphatics removed with the fat around them. To do this it was necessary to include the sub-maxillary salivary gland on each side as one lymph gland is usually buried in the substance of the submaxillary salivary gland. This incision was then closed, the platysma by continued suture with No. 1 catgut, the skin by interrupted silk-worm gut sutures. Drainage was then secured by a stab wound below the line of incision containing a drainage tube cut spiral. Then two artery forceps were so applied to lip as to enclose a V-shaped piece including the cancer. Two through-and-through silk-worm gut sutures were passed through the lip around the artery forceps but not tied. Then Dr. Becker, the anesthetist, compressed the lip at each side near the angle of the mouth with thumb and finger, so as to control all hemorrhage. The V-shaped piece was removed by cutting down outside the artery forceps, then the two previously passed through-and-through sutures were tied and found to control the bleeding, when Dr. Becker released his hold on the lip at the angles of the mouth. Dr. J. G. Fisher examined the specimen and reported no involvement of the lymphatic glands, but that the growth removed from the lip was carcinoma.

The incision healed without suppuration and the patient left the Hospital in six days.

H. S. BABCOCK, M.D.

SECONDARY CARCINOMA OF THE GLANDS OF THE FEMORAL REGION

T. R., male, aged 63 years, section foreman. Family history negative. Personal history. Had typhoid at 15 years of age, complete recovery; gonorrhea at 21 years of age, followed by bubos of both sides in inguinal region, which were opened and drained. Recovery after two months. At age of 32 had pneumonia but made an uneventful recovery. Twenty years ago patient noticed that the veins of both legs were enlarged and that the skin became a purplish blue. Ten years ago a portion of the superficial veins of both legs were extirpated below the knee. Two months later an ulcer formed over the external malleolus of the left ankle. This never became healed.

In December, 1910, the patient noticed that there was a peculiar growth appearing at the site of the ulcer and on May 1, 1911, went to a hospital in Chicago and a surgeon removed the veins above the knee. Patient left the hospital in June and came under my care in July, 1911, at which time I discovered a distinct cauliflower like growth covering the base of the old ulcer. There was also a small nodule in the femoral region of the corresponding side. Amputation of the foot was advised but the patient would not at that time consent and returned to his home. In August a section of the growth was examined and diagnosis of carcinoma made, and the foot amputated above the ankle at a Chicago Hospital. Last December the patient observed that the nodule in the femoral region was increasing in size and on March 5, when he came to me for advice I found a tumor almost as large as my hand which had broken down and covering the whole

femoral region. It was only slightly movable on the deeper tissues but not very painful to the patient.

Operation.—The patient was operated on at a surgical clinic given under the auspices of the Vermilion County Medical Society at St. Elizabeth's Hospital, at Danville, Ill., on March 11, 1912. The operation was performed by Dr. F. W. Barton assisted by Dr. A. E. Dale, the anesthetic being administered by Dr. Gunderson. The whole mass including the overlying skin was removed by an oval incision and a complete dissection of the glands of the region done, extending up along the vessels to the saphenous opening. Owing to the large amount of tissue removed it was possible only to partially close the incision. At this time, ten days after operation, the patient seems to be rather rapidly losing ground physically and while the wound seems to be doing well I have little hope of his recovery.

The microscopical examination of a section of the mass removed shows carcinoma.

F. W. BARTON, M.D., Danville, Ill.

Meeting of April 8, 1912

At the Auditorium of Washington School building, Dr. L. B. Russell, president, called the Vermilion County Medical Society to order, April 8, 1912, at 8:30 p. m. About 200 people, including the superintendent of schools, principal, teachers, and leading citizens of Danville, were present. It was decided to defer the reading of the minutes till the next meeting. Dr. W. H. Goodwin was elected to membership; Dr. E. E. Clark gave a very interesting talk on "Diseases of the Nose and Throat of School Children which Should be Corrected." Dr. Benj. Gleeson read a valuable paper on "The Care of the Eyes in School Children." Dr. J. D. Wilson of Danville, Ill., gave a good talk on "The Care of the Teeth in School Children." Dr. Wilkinson had an excellent paper on "The Control of Contagious Diseases in School Children."

The papers and talks were abridged for the purpose of giving the laymen opportunity to bring out in discussion the value of medical inspection of school children. The discussion was led by the superintendent of city schools, L. H. Griffith. Mrs. Griffith discussed the financial loss to the community incurred by absence of pupils from school due to avoidable conditions and diseases. A great deal of the lost advantages in school could be avoided by systematic and regular medical school inspection. Prof. C. E. Lawyer, principal of Danville High School, discussed the possibilities of the teacher in rightly directing the pupil in the protection of the eyes. Prof. L. A. Tuggle, principal of Lincoln school, who is doing more in manual training instruction than any other teacher in the county, said a perfect physical being is essential for the best brain product, and that manual training increases body elimination, energy and wealth and inculcates honesty.

SOLOMON JONES, Secretary.

NEWS OF THE STATE

NEWS

—Dr. Helen Babb of Springfield has gone to live with her father near Pawnee.

—It is reported that a large number of cases of small-pox exist in Kewanee.

—Dr. M. H. Farmer of Virden has sold his property in that city and will remove to Springfield, Ill.

—Dr. Stanley Castle of Springfield has removed to Carruthersville, Mo., where he has land interests which require his attention.

—Fifty-five members of the Peoria Medical Society have signed a statement indorsing the establishment of a tuberculosis sanatorium in the city, as provided by the Glackin law.

—The State Charities Commission urges the establishment of a state industrial colony for improvable epileptics. This colony is not intended to care for chronic and insane epileptics.

—Drs. James J. Monohan and Nelson Clinton announce the formation of partnership for the general practice of surgery, with offices in the Reliance Building, 32 North State Street, Chicago.

—Dr. W. N. Foreman of Whitehall recently celebrated his 75th birthday anniversary by inviting his many friends to a banquet. Dr. Foreman holds his age remarkably well, and is still engaged in active practice.

—The Western Suburban Hospital Association, whose membership is made up of physicians of Oak Park, Austin, River Forest, Elmhurst and other west suburban towns, has perfected plans for a new hospital to be erected at Austin Avenue and Ontario Street, Oak Park, to cost from \$60,000 to \$100,000.

—The Presbyterian Hospital, Chicago, will erect a nurses' home and school to cost about \$250,000 on a site in Congress Street between Hermitage Avenue and Wood Street, which has been purchased for \$55,000. The building will be six stories in height and will be provided with class rooms, a laboratory, dormitory, accommodations for 150 and a roof garden.

—At a special meeting of the Stephenson County Medical Society in Freeport, April 8, the committee appointed to consider the matter of the establishment of a medical library and the publication of a local society bulletin reported favorably on both propositions. The library board has granted the society a room for a medical department and each physician present subscribed \$10 toward the establishment of the library.

—The Norman Harris lectures for 1912 of the Northwestern University were given in the Annie May Swift Hall, April 15-20, by Dr. Milton J. Rosenau, professor of preventive medicine and hygiene in Harvard University. The general subject of the lectures was "Milk and Its Relation to Public Health," and the successive lectures dealt with various phases of the milk question: "Dirty Milk," "Diseases Spread by Milk," "Clean Milk," "Pasteurization" and "From Cow to Consumer."

—A dinner was given to Dr. Ludvig Hektoen at the Chicago Club April 11 by the faculties of Rush Medical College and the College of Physicians and Surgeons and his former students at these institutions, in honor of the twenty-fifth anniversary of his entrance into the practice of medicine. Dr. Frank Billings presided. An oil painting of Dr. Hektoen was presented to him by his friends, and the presentation speech was made by Dr. E. R. LeCount, Prof. E. O. Jordon and Drs. H. Gideon Wells and James Herrick responded to toasts.

—Dr. Willis O. Nance, the only physician in the city council, Chicago, recently reelected by a majority of more than 1,700 votes, introduced an ordinance providing for the report to the commissioner of health of all cases of sore eyes in babies. This was passed by the council and signed by the mayor. He introduced ordinances providing for the abolishment of roller towels in public lavatories and for the more stringent control of the sale of cocain and narcotic drugs, both of which were passed. He also introduced an ordinance prohibiting the sale of hypodermic syringes to persons other than a physician, but this was not passed by the council as the corporation council decided it to be unconstitutional notwithstanding the fact that such a law for the same purpose was enacted by the New York legislature a little over a year ago. Dr. Nance's good work has earned his appointment to the chairmanship of the committee on health in the recent reorganization.

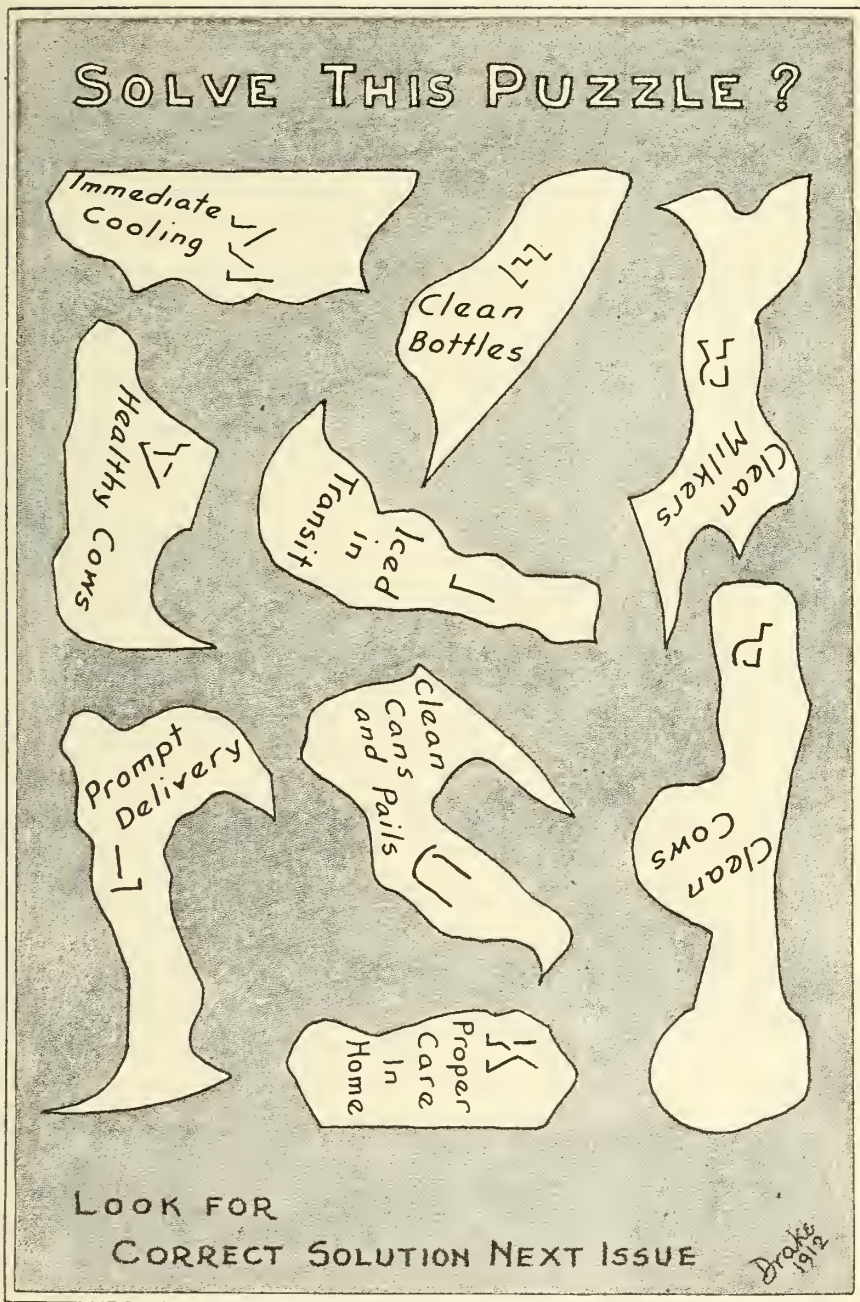
NEW INCORPORATIONS

Intravenous Medical Society of America, Chicago; educational. Incorporators, J. L. Van Valkenburgh, Chester C. Moe and W. G. Hamlin.

Sheridan Park Hospital, Chicago; \$2,500; maintain a hospital. Incorporators, Robert C. Menzies, Roland C. Sturgeon and Thomas E. MacKinlay.

PUBLIC HEALTH

—Drs. Robert A. Black, R. R. Ferguson and Frederick Tice, members of the Chicago Milk Commission, discussed clean milk, its production, transportation and distribution at a public meeting in the public library building, April 6.



PERSONAL

Dr. W. H. Wilder, Chicago, has sailed for Europe.

Dr. Edmund J. Doering, Chicago, has returned from a trip to the Mediterranean.

Dr. E. W. Wahl, Sterling, who has been seriously ill, has recovered and resumed practice.

Dr. John E. Tuite, Rockford, has been elected president of the Teachers Pension Board.

Dr. E. W. Canldwell, Lamont, fell on an icy walk recently and sustained a severe sprain of the wrist.

Dr. C. U. Collins was unanimously elected president of the Peoria Association of Commerce, March 21.

Dr. Arthur R. Edwards, Dean Northwestern Medical School, who recently underwent an operation for gall stones, is entirely recovered and has resumed his practice.

Dr. George A. Weirick, who has been assistant superintendent of the Broughton Sanatorium, Rockford, Ill., has assumed charge of the institution, vice Dr. Russell Broughton, deceased.

At the meeting of the Illinois State Board of Health, held in Chicago, April 16, Dr. George W. Webster, Chicago, was reelected president, and Dr. James A. Egan, Springfield, permanent secretary.

REMOVALS

Dr. F. D. Fletcher has removed from Chatham to Springfield.

Dr. A. B. Nichols of Mount Carmel has removed to Quincy, Ill.

Drs. George W. Hall, Frank E. Pierce, E. Fletcher Ingals, Joseph Z. Bergeron, James C. Gill, Elmer L. Kenyon, Daniel R. Brower and Stanton A. Friedberg have removed from the Venetian Building to the Monroe Building, 104 South Michigan Boulevard, Chicago.

DEATHS

ALECIA A. FLANDERS, M.D., Hahnemann Medical College, Chicago, 1886; died at her home in Glencoe, Ill., March 8.

JOHN W. VALPEY (license Illinois, years of practice, 1880), died at his home in Chicago, March 13, from senile debility, aged 79.

HERBERT F. PRAASCH, M.D., Rush Medical College, 1902; died at his home in Chicago, January 31, from intestinal obstruction, aged 33.

LEWIS J. DAVIS, M.D., Medical College of Ohio, Cincinnati, 1880; died at his home in Chicago, March 23, from heart disease, aged 73.

WILLIAM H. GEDDY, M.D., University of Wooster, Cleveland, 1885; died at his home in Nokomis, Ill., March 18, from senile debility, aged 87.

HUGH F. GUNN, M.D., Rush Medical College, 1883; a member of the American Medical Association; died at his home in Galena, Ill., March 5.

OSKER F. TAYLOR (license years of practice, Illinois, 1878); a member of the American Medical Association; died at his home in Granville, January 27, from arteriosclerosis, aged 74.

JOHN ALEXANDER, M.D., Eclectic Medical Institute, Cincinnati, 1885; of Waverly, Ill., who fell, February 28, breaking one of his ribs; died, February 29, from the effects of the fall, aged 84.

WALTER LYNN KINCAID, M.D., died at his home in Roodhouse, Ill., April 1. He was born near Greenfield forty-four years ago, and had practiced medicine in Greenfield, Medora and Roodhouse. His widow and one son survive.

CHARLES CLYDE RAYBURN, M.D., University of Pennsylvania, Philadelphia, 1901; formerly of Kewanee, Ill.; a veteran of the Spanish-American War; died at his home in Colorado Springs, Colo., March 19, from tuberculosis, aged 39.

FRANK WILLIAM RULIEN, M.D., University of Minnesota, Minneapolis, 1897; a member of the American Medical Association and a practitioner of Joliet, Ill., since 1903; died in the Presbyterian Hospital, Chicago, March 29, from organic heart disease, aged 40.

WILLIAM EDWARD GILLILAND, M.D., Washington University, St. Louis, 1870; a member of the Illinois State Medical Society and twice president of the Adams County Medical Society; a pioneer resident of Coatsburg; died at his home, February 28, from cerebral hemorrhage, aged 79.

WILLIAM CRAIG, M.D., Philadelphia University of Medicine and Surgery, 185—; assistant surgeon of the Twenty-Sixth Pennsylvania Volunteer Infantry during the Civil War and later a practitioner of Chicago; for several years an inmate for the Disabled Volunteer Soldiers Home, Danville, Ill.; died in that institution, March 8, from chronic interstitial nephritis, aged 80.

RUSSELL BROUGHTON, M.D., Rush Medical College, 1869; a member of the American Medical Association; a veteran of the Civil War; proprietor and manager of the Broughton Sanatorium, Rockford, Ill., who made the treatment of alcohol and drug addictions a special study for many years and had been remarkably successful in this line of work; esteemed and beloved as a practitioner and friend by his professional brethren and patients; died at his home in Rockford, April 4, from pneumonia, aged 69.

JOSHUA T. PURCELL, M.D., of St. Joseph, died February 11. He was born Sept. 22, 1844, at Sardinia, Ohio; enlisted for the Civil War in 1861; served six years in the War of the Rebellion and on the frontier. He graduated at the Central College of Physicians and Surgeons, Indianapolis, 1876, and practiced in Indiana until 1877, when he removed to St. Joseph and built up a large practice which he continued until a few days before his death. He was a member of the Champaign County and Illinois State Medical Societies.

OBITUARY

DR. JOHN G. VOGT of Trenton, Ill., died March 26, 1912, aged 49. Dr. Vogt graduated from the St. Louis Medical College in 1886; spent a year abroad studying medicine in 1900. Funeral services were held March 29 at the M. E. Church. The local paper said: "As a physician he ranked high among his associates and his skill and services were frequently sought. As a citizen and Christian gentleman his life serves as a model. He was a man of retiring manner and studious habits, painstaking and careful in all he did and said, and discharging faithfully his duties as he saw them. He was ever ready to help where he could. He took a lively interest in all that concerned the welfare of the community and his fellowmen. He was president of the board of education for four years, a director of the Farmers Bank of Trenton, and at one time president of the Clinton County Medical Society. His strongest characteristics were truthfulness and faithfulness. He could be depended on in all the relations of life to perform his part faithfully and well, and his innate truthfulness was the keynote of his character."

Book Notice

THE FRIENDS OF THE INSANE, AND OTHER ESSAYS. By Bayard Holmes, M.D. Price, \$1.00.

Dr. Bayard Holmes, a well-known Chicago practitioner, has issued through the Lancet-Clinic Publishing Company a volume containing 257 pages, on topics of great importance and public interest which he has handled in a very common sense and practical way. We can commend the reading of this little work to the members of the Illinois State Medical Society, and are sure that better practice will be the result after its perusal. A number of these articles have appeared in the ILLINOIS MEDICAL JOURNAL, and have been read at the meetings of the Illinois Medical Society and its component branches.

The melting pot in matters medical seems on the verge of boiling over at present in Chicago. Although the home of the American Medical Association, Chicago contains more low grade medical schools than any other American medical center. The annual report of the Carnegie Foundation for the Advancement of Teaching condemns most of the medical schools in Chicago, and the Chicago *Record-Herald* admits its justice.—*The Lancet-Clinic*, April 13, 1912.

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No. 6

ORIGINAL ARTICLES

NEURONES AND THE NEURONE CONCEPT *

H. E. SANTEE, M.D.

CHICAGO

The evolution of the cell doctrine, as applied to both animal and vegetable kingdom, is a most momentous event in medical history; it constitutes an epoch in scientific progress. We must thank Theodore Schwann and Mathias J. Schleiden for the enunciation of this great *law of growth by the multiplication of cells*. In Schwann's work, published in 1839, he declared that "the universal principle of development in the elementary tissues of all organisms is the principle of the formation of cells." The cells were regarded at first as mere vesicles or closed sacks and little attention was paid to the contents; but after von Mohl, in 1846, described the homogeneous substance of the cells and called it "protoplasm" it was seen that the cell membrane is non-essential. The true conception of the cell was clearly expressed by Max Schultze in 1864, when he restated the cell doctrine and defined a cell as a mass of protoplasm. Whence the new cells originate during development, neither Schwann nor Schleiden at all comprehended. In fact, they believed the cells are formed by crystallization, and that "the new are formed free within the parent cell" (Schleiden). Though von Mohl had called attention to "cell-division" in the vegetable kingdom, as the method of cell-genesis, in 1835, cell-division attracted little attention for many years. The law of cellular growth and the law of cell division, both startling to that generation, were too comprehensive and too far-reaching in their influence to be welcomed at once even by the scientific world; and it was not until Rudolph Virchow, in 1860, absolutely demonstrated that every cell originates by division from another cell—"omnis cellula a cellula"—that the world of science, generally, accepted these assumed laws as facts. Even then, some doubted. The positive proof of the impossibility of spontaneous generation by the great Pasteur, together with the wonderful revelations of the microscope, finally dispelled all

* Read before the West Side Branch, Chicago Medical Society.

doubts. Walther Flemming gave further corroboration of the law when he showed that every nucleus is the offspring of another nucleus which has undergone division.

So the "cell-doctrine" took its high place in science and literature. It seemed to comprehend and illuminate every part of the body, save the nervous system. To that it appeared inapplicable. The cells, as then understood, were seen in the nervous system, it is true; but the nerve fibers seemed more abundant and important than the cells, and Schwann's law made no satisfactory provision for them. Here, the principle of development by the formation of cells, appeared to meet an exception. "Does this law embrace the highest element of the animal organism"? "Are the nerve fibers a part of nerve cells greatly extended"? Such questions naturally occurred to the scientific mind and demanded an answer.

When August V. Waller demonstrated, in 1850, that nerve fibers cut off from their cells undergo degeneration, it was naturally inferred that the fibers are greatly elongated parts of the cells; and that a nerve cell in its entirety comprises the central body, formerly called the cell, and the elongated processes, called fibers. In 1847, R. Wagner observed that the nerve cells in the electric lobe of the torpedo have processes and that they differ among themselves. Remak, in 1854, made a similar observation in the ox's brain and cord, where two kinds of processes seemed to be present. It remained for Otto Deiters to definitely classify the processes of a neurone. This he did in his book, in 1865, which was published after his death by Max Schultze. Deiters divides the processes into 1, a coarse *axis-cylinder process* which becomes the axis of a medullated nerve-fiber, and 2, a heavy *protoplasmic process*, of which there are usually many, resembling the cell-body in structure. He also spoke of many very delicate axis-cylinders about the cell-body, which have since proved to be processes of other neurones.

These observations of Wagner, Remak and Deiters gave strong probability to the inference drawn from the law of Wallerian degeneration, viz., that the nerve fibers are but parts of the nerve cells. But there was a weak point in the evidence. Deiters had not proved the continuity of the axis-cylinder process and the axis of the medullated nerve fiber. In 1871 Gerlach, by his gold chlorid method, discovered that the posterior root fibers of the spinal nerves are continuous with a wonderfully rich arborization of fibers, a nerve network, in the cord but not with any cells in the cord; and that "nerve network" of Gerlach delayed several years a true comprehension of the nerve-cell. He did not appreciate the fact that "the nerve network" is but the terminal arborizations of fibers rising in the spinal ganglia, though he knew that to be their origin. Finally, by using Carl Weigert's mordant with Gerlach's carmin stain the continuity of cell-body and the axis-cylinder of a medullated nerve fiber was demonstrated.

Later it was beautifully shown by Bethe's modification of Ehrlich's vital stain. By adding a solution of ammonium molybdate to Ehrlich's stain, Bethe changed the methylene blue hydrochlorid into the insoluble

methylene blue molybdate and thus made the stain a permanent one. The Golgi stain did much to reveal the constituents of the nervous system. Camillo Golgi of Pavia¹ published this wonderful silver nitrate stain in 1873, but it gained little notice before the appearance of his voluminous articles on "The Finer Anatomy of the Central Organs of the Nervous System" in 1882, 1883 and 1885. By Golgi's method the tissue, cut thin, is treated with a solution of potassium bichromate and osmic acid and then impregnated with silver nitrate. This stain distinctly revealed types one and two of multipolar neurones, which Golgi accurately

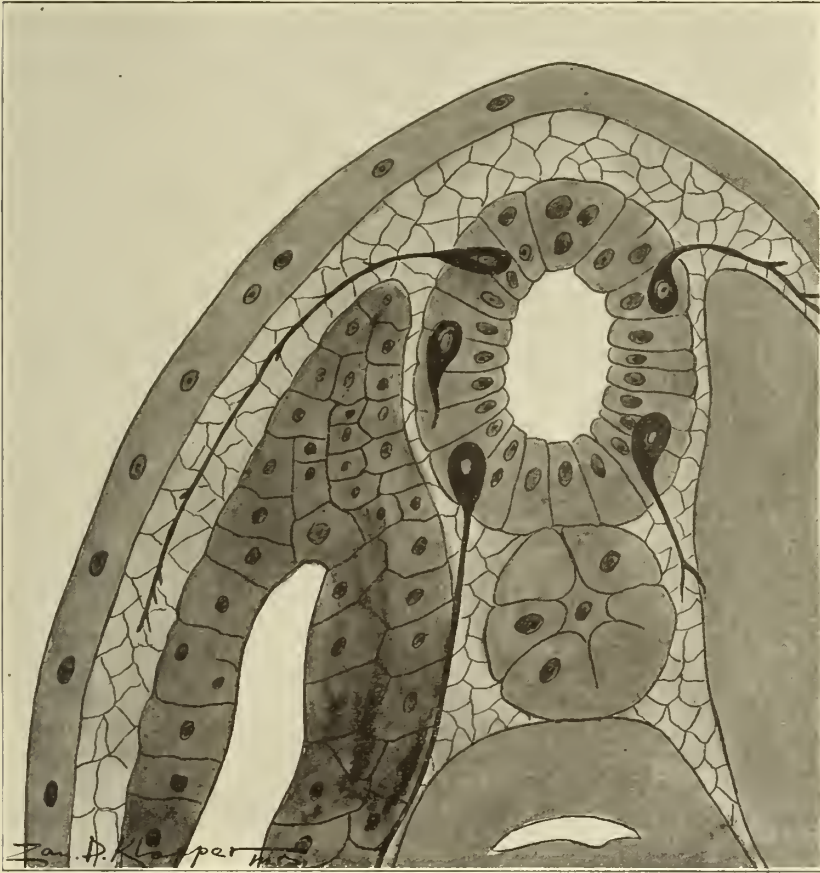


Fig. 1.—Semidiagrammatic section through the spinal cord of the Axolotl. From R. G. Harrison, Figure 14. *Anat. Rec.*, vol. 2, p. 401. (After Held.)

described and pictured: it showed the rich non-anastomosing arborizations of dendrites in continuity with the cell-bodies: it revealed the collaterals given off by axones of cerebral and spinal neurones, as Waldeyer had shown them rising from the axones of Purkinje's cells twenty years before, in 1863. This wonderful Golgi stain shows so great a number

1. Golgi, Camillo: *Riv. sper. di freniatr., Reggio-Emilia*, 1882, viii; 1883, ix, and 1885, xi.

of fibers and such a complexity of arborization in continuity with the so-called nerve cells as to account, apparently, for all the nerve fibers to be found in the nervous system. It led, therefore, toward the conception of the nerve cell now embraced in the term *neurone*. Immediately half a score of great investigators took up the potassium bichromate-osmic acid-silver nitrate method with great enthusiasm and profit—von Kölliker, von Lenhossék, Waldeyer, Edinger, Cajal, van Gehuchten, Retzius, Schäfer, Andriezen, Berkley, Strong, etc.—and Santiago Ramón y Cajal, particularly, applied it with great success to embryonic tissues. In the meantime the great Wilhelm His was pursuing his brilliant investigations which constitute the foundation and much of the superstructure of the present-day embryology of the nervous system. His traced the life history of a nerve cell from the columnar epiblastic cell through all its stages to maturity, and pictured all its phases. He showed the *epiblastic cell* sending out a pseudopod and becoming a *neuroblast*; he showed that pseudopod elongated into an *axis-cylinder*; from that part of the cell opposite to the axis-cylinder, he traced the formation of other pseudopods, which remain protoplasmic in character and, branching tree-like, produce the *dendritic processes*. His elucidated the spinal ganglion cell. Von Kölliker had called attention to its apparent unipolarity in man in 1844, and in 1875 L. Ranvier showed that its single process divides T-like at some distance from the cell-body; but it remained for His to demonstrate all the stages of its life history from an epiblastic columnar cell through the fusiform stage to the adult pear-shape cell, and to show that the single process of a pear-shape cell is equivalent to both processes of the embryonic fusiform cell, being formed by their union, and is made up of the afferent and efferent processes of that cell.

The findings of His were strongly corroborated by all the investigators enumerated above, and by many others during the next few years; and in 1891 Heinrich Wilhelm Gottfried Waldeyer² summing up the discoveries of His, Forel,³ Cajal,⁴ and others, suggested the Greek word *neurone* *νεῦρον* as a name for the nerve element: and he classified the facts upon which rests the neurone conception of the nervous system. Waldeyer is the father of the neurone doctrine, though others discovered most of the facts upon which it is based. The neurone doctrine is very simple. It declares that the nervous system, like other parts of the body, is also made up of *cells*, which are in the nervous system derived from *epiblastic cells*, and comprise a *cellbody* and *two kinds of processes*, the efferent and the afferent. Such a nerve cell Waldeyer calls a neurone. Millions of these neurones, related to each other manifoldly by means of their processes, constitute the functioning elements of the nervous system. The nerve fibers are not independent elements, but are the axonic and dendritic outgrowths of the cell-body with which they remain connected and on which they are dependent for life.

2. Waldeyer: Deutsch. med. Wchnschr., 1891.

3. Forel, A.: Arch. f. Psychiat. und Nervenkr., Berlin, 1887, vol. xviii.

4. Cajal, S. R.: Revista Trim. de Histol. Normal, etc., Nos. 1 and 2, Mayo y Agosto 1888, Anat. Anzeiger, Jena 1890, etc.

The neurone conception has greatly clarified our understanding of the nervous system and its diseases. Let us then inquire whether it is sustained by the investigations of the last twenty years.⁵

V. Hensen's⁶ doctrine of "continuous intercellular bridges" as the

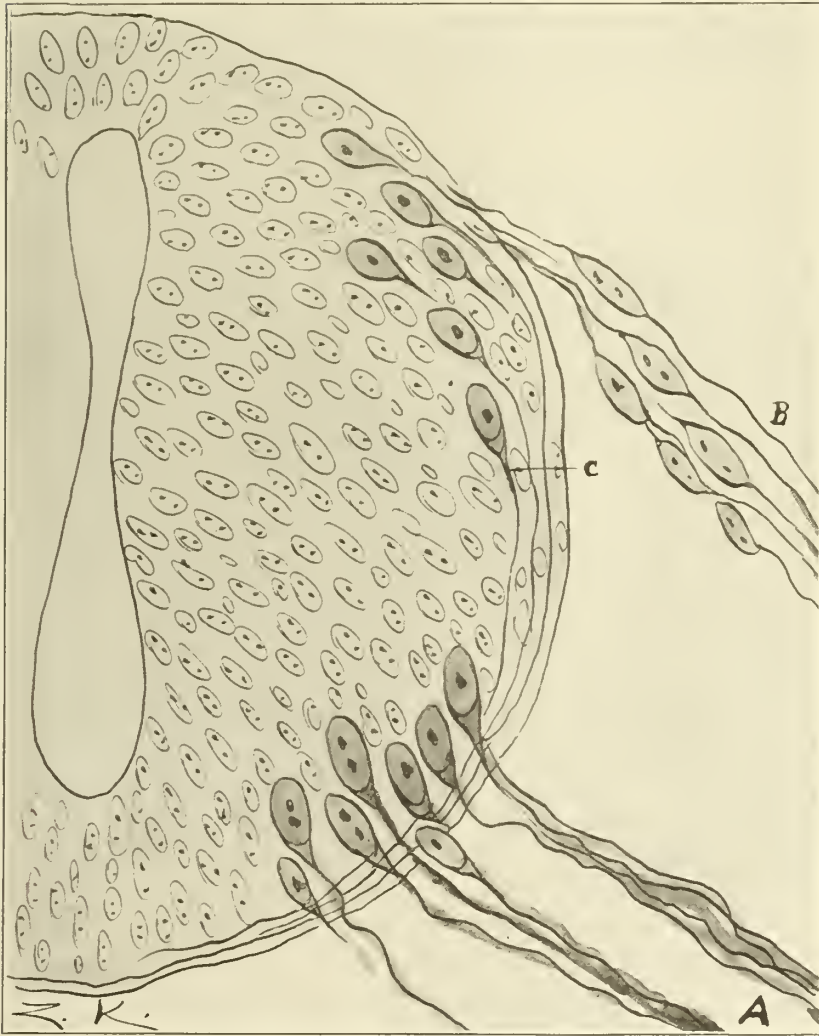


Fig. 2.—Diagram from section of chick's cord, third of incubation. A, motor neuroblasts; B, spinal ganglion; C, association neurones. Golgi method. (After Ramon y Cajal.)

anlagen of the peripheral nerves is directly opposed to the neurone conception that nerve fibers are developed by and from the cell-body of the

5. An excellent discussion of the investigations on the neurone up to the year 1906 may be found in Prof. Lewellys F. Barker's lecture to the Harvey Society of New York, published in the *Jour. A. M. A.*, March 31 and April 7, 1906, and in his "Nervous System," published by Appleton, 1899.

6. Hensen, V.: *Virchow's Arch.*, 1864, vol. xxxi, and *Arch. F. Mikr. Anat.*, Bonn, 1868, vol. iv.

neurone. During the development of the embryo, Hensen believed that cell-division is incomplete and that therefore the cells remain connected by "intercellular bridges" some of which become functional and are converted into nerve fibers, while the others atrophy and disappear. The *rête mirabile* of Gerlach and the *fibrillar continuum* of Apáthy⁷ and Bethe,⁸ and the "pluricellular doctrine" of fiber formation, advocated by Held, Bethe and some other investigators, all militate somewhat against the neurone doctrine. The regeneration of peripheral nerves has afforded the strongest evidence against this doctrine, so I shall examine this first.

Autoregeneration.—A. Bethe,⁸ experimenting with young dogs, six to eight weeks old, maintains that a sectioned peripheral nerve (the sciatic) may regenerate without establishing any central connection. The "band-fiber," formed by the multiplication of the neurolemma cells, takes on a certain amount of specificity: it exerts a positive attraction for the kind of fibers originally forming the cut nerve and undergoes degeneration peripherally, if cut, according to Bethe. This cellular band (axialstrandfiber) Bethe believes is converted into an axis-cylinder, by the fusion of its cells, and may become a complete functioning nerve fiber without establishing any continuity with the central nervous system, though he admits that it will degenerate after some months if no central connection is formed. Embryologically, Bethe also believes that nerve fibers are formed by the fusion of a similar band of cells derived from the neural crest. Bethe is a strong advocate of the pluricellular origin of nerve fibers.

The interesting experiments of Bethe were repeated by Raimann,⁹ of Leipzig, who cut the sciatic nerve, tore out the whole central stump, including the spinal ganglia, and excised that part of the spinal cord connected with the sciatic nerve. After the lapse of some months he found in the peripheral stump, regenerated nerves, axones containing neurofibrillæ surrounded by medullary sheaths. At first this experiment seemed conclusive; but there is a possibility that fibers had grown into the peripheral stump from a collateral nerve—the femoral or obturator—since Frossmann¹⁰ has shown that the proliferating neurolemma cells of a distal stump have a strong attraction for nerve fibers.

Lugaro,¹¹ in 1905, extended Raimann's experiments and excised the whole lumbar enlargement of the spinal cord, with the lumbar and sacral spinal ganglia, after cutting the sciatic nerve and tearing out the proximal stump. This was performed upon three puppies which lived and, at the end of three months, the peripheral stump of the sciatics was inexcitable to faradic current and showed under the microscope no regenerated fibers. Possibly marasmus may have been the cause of Lugaro's negative result, otherwise his experiments afford positive disproof of the autoregeneration of nerve fibers.

7. Apáthy, S.: Mitt. a. d. Zoologischen Station zu Neapel, 1907, vol. xviii.

8. Bethe, A.: Allg. Anat. u. Phys. des Nervensystems, Leipzig, 1903.

9. Raimann: Abstract, Neurol. Centralbl., Leipzig, 1905, p. 1015.

10. Frossman: Beitr. z. Path. Anat., Jena, 1898.

11. Lugaro: Neurol. Centralbl., Leipzig, 1905, p. 1143.

In 1908-9 J. Gordon Wilson¹² performed a series of experiments on young dogs, excising a considerable portion of the sciatic nerve, but leaving the spinal cord and ganglia intact. These puppies lived and thrived. They had no control of the leg below the knee and no sensibility to touch or pin prick in the same region. After four to six months they were tested with the faradic current under an anesthetic and the peripheral stump examined both macroscopically and microscopically. In only one case did he find faradic response and regenerated nerve fibers in the peripheral stump, when unable to demonstrate the reestablishment of central connection. In that case there were so few fibers in the peripheral stump and the faradic contractions were so slight that Dr. Wilson suspected a central connection had been formed by some branch of the femoral or obturator nerve, though he was unable to find proof of it.

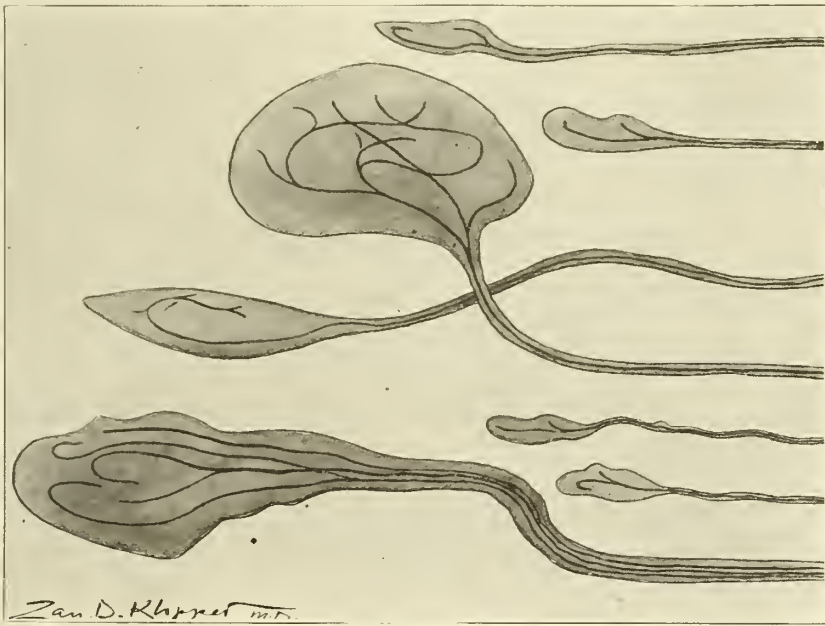


Fig. 3.—Fibers from the proximal stump of a cut nerve, twenty-one days after section of nerve. Figure 2. Plate II. F. W. Mott, *British Medical Journal*, 1909. (After Marinesco.)

F. W. Mott details a series of similar experiments, on monkeys, in the *British Medical Journal* for 1909.¹³ In the same article he gives other evidence supporting the neurone doctrine. The experiments were performed by Mott and Halliberton. Having cut out a segment of various nerves, mountings were made at successive periods of time of the central stump, the vascular connective tissue between the stumps, and the peripheral stump. The earlier mounts showed sprouting fibers in the central stump only; those made a little later showed fibers tipped with their cones of growth extended down into the connective tissue between the stumps, but in both cases no regenerated fibers could be found in the

12. Wilson, J. Gordon: *Anat. Rec.*, January, 1909, pp. 27-39.

13. Mott, F. W.: *Brit. Med. Jour.*, 1909, II, p. 1389.

peripheral stump; in the later mounts, the sprouting fibers were found extended into the peripheral stump and the cones of growth were pushing their way down, apparently into the axialstrand fibers, (Figs. 3 and 4).

M. Dominici¹⁴ of Berlin published Oct. 23, 1911, the latest study of the regeneration of peripheral nerves that I have seen. His conclusions, as to regeneration in dogs and rabbits, are in accord with those of Lugaro, Peroncito, Wilson and Mott, and most other investigators. He claims that neither the axis-cylinder nor the medullary sheath can regenerate save by central connection. Unless central connection is established by collateral nerves, the axis-cylinders always grow out from the central stump into the distal stump of the cut nerve. The neurolemma cells undergo thickening and at least the nuclei undergo mitosis; but, in Dominici's opinion, they take no further part in regeneration, other than that of directing the sprouting fibers by a positive neurotropism. Dominici does not agree with Peroncito as to the time when sprouting fibers may be found in the central stump. Dominici found none, in dogs and rabbits, before the thirtieth day after section. Peroncito found fibers, which he considered nerve fibers, at the end of the second day. At the tenth day Dominici found fibers reaching from the central to the distal stump, through the mass of vascular connective tissue, which at first appeared to be nerve fibers; but, when tested by the method of Marchi and Cajal's photographic method, they proved not to be axis-cylinders. Dominici found that in a period of three or four months the regenerating axis-cylinders will grow out into the peripheral stump when as much as 6 cm. of the sciatic has been resected.

Summarizing the evidence furnished by the regeneration of peripheral nerves, dog C of Wilson's series just allows ground for a doubting Thomas; but, altogether, the evidence furnished by the regeneration of peripheral nerves is strongly in favor of the central outgrowth of the regenerating fibers, and is as strongly opposed to the "pluricellular doctrine" of Bethe and Held and the "intercellular bridges" of Hensen; consequently, it not only fails to overthrow the neurone doctrine, but it affords most positive corroborative proof of the correctness of that doctrine.

Neurofibrillæ.—Another series of investigations that has cast some doubt on the neurone doctrine is that relating to the neurofibrillæ. Neurofibrillæ were discovered in 1872 by Max Schultze in the cells of the electric lobe of the torpedo. He saw them both unstained and stained. They attracted no attention until S. Apáthy,¹⁵ twenty-five years later, described and pictured them in the nerve cells of the leech. Apáthy's gold chlorid stain gives the fibrillæ a beautiful violet hue. His drawings show the same fibrillæ running from one branch to another of the same dendrite; from one dendrite to another; and, forming a rich plexus in the cell-body, the fibrillæ extend into the axone. Nor is this all. Apáthy believed he saw the fibrillæ running from one neurone into another, and even on through several of them to the muscle or gland-cell or the

14. Dominici, M.: Berl. Klin. Wechnschr., Oct. 23, 1911.

15. Apáthy, S.: Mitt. a. d. Zoologischen Station, Naples, xii, 1897.

sensory end organs. Apáthy divides the nervous elements into two classes, 1, the nerve cells and 2, the ganglion cells. The origin of the fibrillæ is in the nerve-cells, and the ganglion cells form the frame-work over which the fibrillæ run to reach their ultimate distribution. Apáthy,

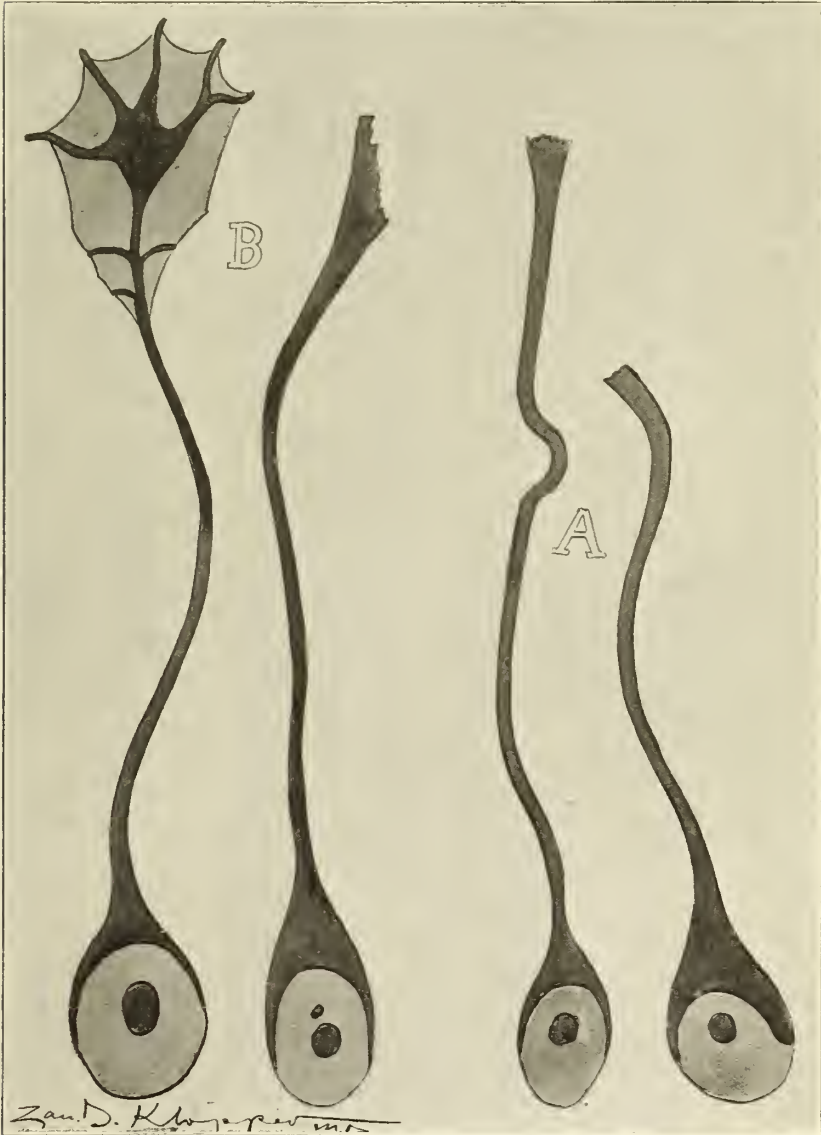


Fig 4.—Growing neuroblasts. A, stained with silver nitrate; B, Golgi stain, showing distinct cone of growth. From Plate II, Figure 6. F. W. Mott, British Medical Journal, 1909. (After Cajal.)

therefore, teaches a “fibrillary continuum” as the conducting part of the nervous system and relegates a large proportion of the nerve cells to the position of mere supporting cells.

Soon after Apáthy's study of the leech and earthworm, A. Bethe of Bonn¹⁶ discovered the neurofibrillæ in man and some other vertebrates. Bethe removed the tigroid bodies with ammonia, and treated the cells with hydrochloric and molybdic acid and toluidin blue.¹⁷ Bethe's work thus extended the notable discoveries of Schultze and Apáthy and made it very probable that fibrillæ are present in all neurones. Bethe, likewise, lent his support to the hypothetical "fibrillary continuum" of Apáthy. This hypothesis is equally confusing with that of Gerlich's *rôte mirabile* and, fortunately, is not supported by the findings of other investigators.

H. Held¹⁸ finds fibrillary structure of neurones, netlike in appearance, which he calls the "sponge formation" (axospongium). On the fibrillæ, usually at the points of intersection, he finds small granular bodies, very abundant in the axone hillock, the axone and its endtufts, but sparsely scattered elsewhere in the neurone, which he calls *neurosomes*. These neurosomes are identical with the granular mitochondria; the chain-like mitochondria have been discovered since Held's neurosomes. These are distinct from the Nissl bodies and characterize the efferent part of the neurone, as the Nissl bodies do its afferent part. The distribution of the neurosomes is a fact of great importance; it makes it possible to accurately distinguish the terminals of axones from the dendrites or cell-body with which they are in contact. Even in those rare cases where Held observed the axone terminals extending into the interior of the succeeding neurone and uniting with it (concreting) he could positively identify the end of one and the beginning of the other by the abundant presence of the neurosomes in the endtuft of the axone. He could trace none of the fibrillæ beyond the point of fusion or contact of the two neurones. Held strongly supports the neurone doctrine. He found that the so-called non-stainable cytoplasm stains well with erythrosin; and, if this is followed with a modified Nissl stain, the tigroid bodies appear as masses of fine blue granules on a red background.

The celebrated Spaniard, Cajal¹⁹ of Madrid, took up the study of neurofibrils and invented a new stain which reveals them distinctly throughout the neurone, but not outside of it. M. Bielschowsky of Leipzig,²⁰ combining the gold chlorid method of Apáthy and the silver nitrate method of Golgi, produced another wonderful stain for the fibrillæ. But even a more remarkable stain than any of these for neurofibrils is that of Donaggio.²¹ This stain reveals the most minute fibrillæ, but nowhere are they shown outside of the individual neurone. These three stains of Cajal, Bielschowsky and Donaggio in the hands of the most skillful investigators fail to show the neurofibrils beyond the limits of the individual neurone to which they belong; they consequently, fail to stain the "Golgi nets," which are probably neuroglial in character; and they furnish very strong evidence against the existence of Apáthy's "fibrillary continuum."

16. Bethe, A.: Arch. f. Mikr. Anat., Bonn, 1900, iv, 513.

17. Bethe, A.: Morph. Arb., Jena, vol. viii, 1898.

18. Held, H.: Arch. f. Anat. u. Entwicklsgesch. and Supplement, Leipsic, 1897; Arch. f. Anat. u. Phys. Anat. Abth., Leipsic, 1895.

19. Ramón y. Cajal, Santiago: Trab. del Lab. de investg. Biol., Madrid, 1903.

20. Bielschowsky, M.: Neurol. Centralbl., Leipsic, 1903, vol. xxii.

21. Donaggio, H.: Review Neurol. and Psychiat., Edinburgh, 1905, iii, 81.



Fig. 5.—A growing neuroblast from the spinal cord of a tadpole. Figure 20. R. G. Harrison, *Anat. Rec.*, December, 1908.

If the "fibrillary continuum" existed, connecting the central "nerve-cells," by way of the succeeding "ganglion-cells," with the muscle-cells and gland-cells of the periphery, then degeneration should extend to the periphery when the central neurones are destroyed, which we know is not the case.

The observations of A. Forel²² on the lateral geniculate body contribute further evidence on this point. He noticed atrophy of that body after enucleation of an eye, as well as after ablation of the visual cortex. But, on examining the atrophied body under the microscope, he found that the diminished size, in the case of enucleation, was due to the absence of the optic nerve fibers and, in the second case, to the degeneration of the cell-bodies whose axones enter into the optic radiation. Degeneration did not extend from one neurone into the next. Neurofibrillae, though undoubtedly present within the neurone, do not exceed its limits, nor are they in any way connected with the so-called "Golgi nets," surrounding the cell-bodies. They are from first to last but a part of the neurone to which they belong, and in no way do they invalidate the neurone doctrine. It remains to be discovered whether they are the chief conducting elements.

Later Embryologic Evidence.—The "pluricellular hypothesis" that a chain of spindle cells undergoing fusion produces nerve fibers had a number of able advocates in the last decade of the nineteenth century, and these champions brought forward new evidence in the decade just past. Bethe, studying the embryonic chick, describes a chain of spindle cells extending from the neural tube out into the body wall, which he believes is converted into the nerve fiber. He is ably supported by S. Apáthy and Paton,²³ by Sedgwick and by Held.²⁴ Held observed the embryonic nerve fiber extending out from the cell-body in the neural tube through a chain of spindle cells which appeared to him to be gradually converted into the growing fiber. (Fig. 1). The same appearances are differently interpreted by His, Cajal, Forel, von Lenhossék, van Gehuchten, von Kölliker, Waldeyer, Edinger, Retzius, Schäfer, Barker, Starr and many other investigators. (Fig. 2). However clear these pictures of developing nerve fibers may appear to us and however reasonable their interpretation by the neuronists, it must be admitted that facts capable of exactly opposite interpretations are not conclusive. To devise an experiment that is absolutely conclusive, as to whether a nerve fiber is a continuous outgrowth of the body of the neurone or is formed by extra-neuronic elements, requires a degree of genius. We may congratulate ourselves that it was an American who furnished this positively conclusive evidence of the neuronistic origin of nerve fibers. These experiments disprove at once the "pluricellular hypothesis" of Bethe and Held and the doctrine of "intercellular bridges" proposed by Hensen. Ross Granville Harrison²⁵ of Yale has the honor of devising and successfully performing these experiments on embryo frogs and toads. One cannot study these

22. Forel, A.: Arch. f. Psychiat. u. Nervenkr., Berlin, 1887, vol. xviii.

23. Apáthy, S.: Mitt. a. d. Zoologischen Station, at Naples, 1907, vol. xviii; Paton, *ibid.*

24. Held, H.: Anat. Anz., Jena, 1907, vol. xxx.

25. Harrison, Ross Granville: Anat. Rec., 1908, II, 285.

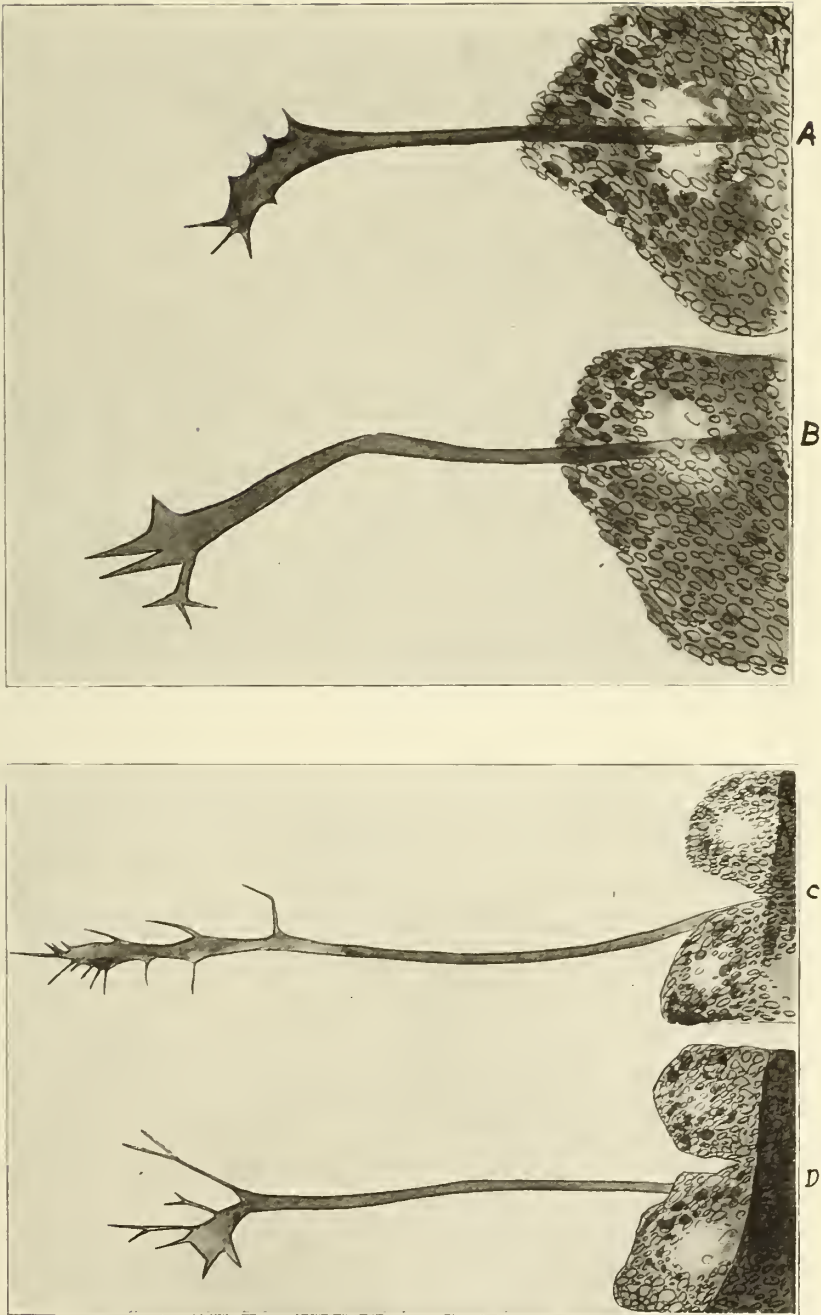


Fig. 6.—Two growing axones from the tadpole, from Figures 21 and 22. R. G. Harrison, *Anat. Rec.*, December, 1908. A. B., same fiber, twenty-five minutes apart; C. D., another, fifty minutes apart.

wonderful experiments without harking back to the founders of medicine. *Observation, experiment, and induction*, the watchwords of Aristotle, Hippocrates and Galen, are the keys that have unlocked the secrets of all science, and will ever continue to be the principles of scientific progress.

Experiment 1.—Dr. Harrison very carefully excised the spinal part of the neural crest of two 2.7 mm. embryo frogs (*rana esculenta*) and brought their wounds together so that the embryos grew back to back. No neurones had begun to develop when the experiment was undertaken. Eight days later the embryos, which grew nicely, were preserved and examined. Naked spinal nerves were found grown out of the ventral part of the neural tube. These were the motor fibers of the spinal nerves. There were no sensory fibers, no medullary sheaths and no neurolemma in the region of the operation. Point one: Neurolemma cells (sheath cells) are not necessary to the formation of nerve fibers.

Experiment 2.—Lifting the spinal part of the neural crest, the ventral part of the neural tube was excised and the crest laid back in position, where it readily healed. After eight days spinal nerves were found, but they were connected only with the spinal ganglia and contained no motor fibers, though the sheath cells were present and had the best possible chance to form the motor fibers, which run for a considerable distance beside the sensory fibers. Point 2: Neurolemma cells will not develop nerve fibers. These facts are further substantiated by the naked axis-cylinders that grow from the dorsal giant cells of Rohan-Beard in the neural tube of the salmon; by the naked sensory nerves in the tail fin of a newt larva, which remain naked for some time, and by Dohrn's observation²⁶ of a perfectly naked trochlear nerve in the adult dogfish (*pristiurus*). The trochlear nerve should receive its neurolemma, in this fish, from the minor ophthalmic nerve; but some accident had prevented the development of that nerve, hence the absence of the neurolemma on the trochlear nerve throughout life.

Experiment 3 concerns the "intercellular bridges doctrine" of Hensen. The whole spinal portion of the neural tube and neural crest are excised from a 2.7 mm. tadpole, before there has been any differentiation of epiblastic cells into neuroblasts. The cephalic end of the neural tube and crest are left intact. This was followed by complete development of the cerebral nerves and entire absence of spinal nerves. Hence, point 3, it is evident that "intercellular bridges" alone are unable to develop nerve fibers in the absence of the neural tube and crest. If there are preformed "intercellular bridges" in the embryonic spinal cord which develop the nerve fibers continuous with cell-bodies in the brain, then removal of the embryonic cord should prevent the development of the descending brain tracts of the cord.

In *experiment 4* the operation is the same as in No. 3, the spinal region of neural tube and crest being excised. After a few days strong nerve fibers were found extending from the medulla oblongata down through the mesenchyme, where the cord should be, to the distance of

²⁶ Dohrn: Mitt. a. d. Zoologischen Station zu Neapel, 1907, vol. xviii.

ten segments and through the whole trunk region of the tadpole; so, if "intercellular bridges" had anything to do with the development of these fibers, there must have been a new set of bridges formed from mesoblastic tissue. These findings are confirmed by Lewis.²⁷ Lewis removed the fore-brain vesicle of a tadpole and observed the development of the olfactory nerves up into the cranial mesenchyme which filled in the space naturally occupied by the forebrain.

Experiment 5 adds one step to No. 4. After removing the neural tube and crest from one tadpole, a small section of neural tube and crest from another tadpole was transplanted in a pocket under the skin of the abdominal wall. Seven days later "the abdominal wall was dissected out and mounted in toto." Aside from branches of the vagus, no nerves were found in the specimen except those growing from the transplanted



Fig. 7.—A few growing neuroblasts of chick's spinal cord. From a field shown by M. T. Burrows, *Jour. of Exper. Zool.*, January, 1911. Figure 2.

section. From this section of neural tube fibers grew in all directions, not coinciding at all with the normal situations of nerves. One nerve, composed of three fibers from three distinct neuroblasts, grew entirely across the peritoneal cavity into the base of the mesentery. Tracing this nerve under the binocular microscope, it was found to come from a miniature spinal ganglion, from which axones extended into the section of neural tube. It was therefore a sensory nerve. Both the distal and central fibers were destitute of sheath cells (neurolemma). The so-called "intercellular bridges" which Hensen believes are transformed into the normal peripheral nerves surely could not develop these nerve fibers.

27. Lewis: *Am. Jour. Anat.*, 1907, vol. vi.

Possibly there are other "bridges" in the body which may be transformed into nerve fibers but which ordinarily are not so transformed. To determine this, Prof. Harrison performed *Experiment 6*. A piece of neural tube from an embryo tadpole was excised and immersed in lymph drawn from a lymph sack of an adult frog. The specimen was placed in a cover glass, inverted over a hollow slide and sealed with paraffin. He was able to keep the specimen alive for five weeks, and under high power of the microscope observed from day to day the conversion of epiblastic cells into neuroblasts. He watched the sending out of a *protoplasmic process* (a pseudopod); the extension of that process through the neural tissues out into the lymph; a growth within the lymph equal to twenty microns in 25 minutes; the changing of the proximal part of the process into the *fibrillar structure of an axone*, but the persistence of protoplasmic character and amoeboid movement in the distal end; and the continuance at the distal end of the same bulbous form, the "cone of growth," observed in ordinary embryologic development, as well as in the outgrowing fibers of the proximal stump of a cut nerve. (Fig. 5). The experiments of Harrison thus show us these facts:

1. The development of nerve fibers in the absence of "intercellular bridges"; 2, in the absence of sheath cells; and 3, in the absence of bands of spindle cells which, according to Held, might fuse and form them; 4, they show a failure to develop nerve fibers in the presence of sheath cells; and 5, they prove that nerve fibers do not develop except in the presence of, and as an outgrowth from, epiblastic cells contained chiefly in neural tube and crest. Hence the cellular origin and outgrowth of nerve fibers is absolutely settled for the *rana esculenta* and, with the strongest probability, we may infer that the same principles obtain in other animals. Similar experiments were performed by Burrows on the chick embryo and Harrison's results were confirmed. (*Jour. of Exper. Zool.*, x, 1911). Burrows used blood plasma instead of lymph (Figs. 6 and 7). Warren and Margaret Lewis (Figs. 8, 9, 10) cultivated sympathetic nerves in sections of intestines from embryo chicks of six days to twelve days, in pure saline solutions (NaCl, CaCl₂, KCl, etc.) and obtained a growth of nerve fibers, with fibrillae, equaling 1.15 mm. in length and a growth of .5 micron to 1 micron per minute, and as much as 56 microns in an hour. (*Anat. Rec.*, vi, January, 1912). Burrows and the Lewises fully sustain Harrison in all his findings, and the Lewises abolish the possibility of the clot reticulum forming fibers. Marian L. Shorey contributes the same kind of evidence from another cold-blooded animal, the necturus. (*Jour. of Exper. Zool.*, 1911, x, 85-93).

So we come right back to the original conclusions of His, Forel, Cajal, Kölliker, Waldeyer and many other honored investigators. The neurone is primarily an independent epiblastic cell from which the axone first grows out and, later, one or more dendrites develop. The axones are always cellulifugal in conduction, while the dendrites always conduct toward the cell-bodies. The relation of neurones is preeminently that of contact, though in lower forms of animals conerescence may occur. (Held).

Neurotropism.—What causes the nerve fibers to make the proper peripheral relations is not fully determined, but is partly explained by the existence of a neurotropic attraction exerted by the tissues. Nerve tissue has a strong attraction for growing nerve fibers, as was discovered by placing pieces of nerve tissue and liver in the course of developing fibers from the proximal stump of a sectioned nerve. The fibers grew into the nerve tissues but not into the liver.

Many experiments, Frossman's and others, have shown that the "band-fibers," formed by the neurolemma of a sectioned nerve, strongly



Fig. 8.—Growing axones of a chick, from Figure 1. M. T. Burrows, Jour. of Exper. Zool., January, 1911. 1, at 10:20 a. m.; 2, at 10:45 a. m.; 3, at 12 m.; 4, at 3:05 p. m.

attract the fibers growing from the proximal stump, so that they will pursue a very roundabout way, if necessary, to reach that band fiber. This might be inferred from the former experiment, now that we know the neurolemma cells are epiblastic and are derived from the neural crest; but it appears that other tissues also have a positive neurotropic attraction. As Ross G. Harrison showed by transplanting embryonic limb-buds in the wood frog (*Rana sylvatica*) to various parts of the body, tail and head of other embryos. The limbs developed normally as to vessels, muscles and nerves, the latter having the normal arrangement

and distribution in the limb; but centrally connected in one case with the fascial nerve, in others with the cervical, or thoracic or sacral nerves, according to the point of implantation. No nerves developed in the limb if the neural tube and crest were removed.

It is evident, when sacral nerves grow into a forelimb and establish normal relations and connections in that limb, that there must be some guiding force, neurotropic, stereotropic or other kind, which leads them to their proper structures.

Braus²⁸ made similar transplanting experiments with great ingenuity, and was led to believe in Hensen's theory of "intercellular bridges"; but later experiments indicate that some of his observations were inaccurate, particularly the experiment in which he transplanted the limb bud from a tadpole whose neural tube and crest had been removed at such an early age that no peripheral nerves were developed. This nerveless limb was implanted in the place of the natural limb of an otherwise normal tadpole. The limb does not develop fully and Braus claims that no nerves are formed in it; because the "intercellular bridges" had atrophied, just as nerve fibers do when isolated and as would be expected in these bridges, according to Hensen's theory. But Harrison repeated the experiment on the wood frog and found that some nerves, though not many, do develop into the limb, the atrophic muscles, etc., evidently do not have the customary force of attraction for the nerves. In the *Jour. of Exper. Zool.* for January, 1911, Marian L. Shorey presents facts which indicate that in the necturus the products of muscle metabolism strongly attract developing motor nerves, hence, the atrophic muscles in the nerveless limb explain the presence of but few nerve fibers.

Classification of Neurones.—According to the number of processes there are just two classes of neurones, viz., multipolar and bipolar. Only multipolar neurones are contained in the brain and cord; they also comprise the greater part of the sympathetic ganglia, and a few are found in the common sensory ganglia (Dogiel²⁹). The multipolar neurones are of two types; the first type has a long axone, the second type has a very short axone which breaks up almost immediately into branches of nearly equal size and importance. If the axone and dendrites both ramify brush-like in type 2, the brush cell of Cajal is the result, but it has only one axone.

The bipolar neurones comprise the peripheral sensory neurones, and only these. They originate, excepting the retinal, the olfactory, and possibly acoustic neurones, from the neural crest. The optic neurones originate from the ophthalmic diverticulum of the forebrain. The ophthalmic pit, which forms the visual organ in metazoa, in higher forms is encroached upon by the medullary folds and is included in the cephalic part of the neural tube, from which it is later protruded as ophthalmic vesicle and cup. Hence the origin of the retinal neurones is comparable to that of the olfactory and auditory; and, though there are morphologic reasons

28. Braus: *Anat. Anz.*, 1905, vol. xxvi.

29. Dogiel: *Anat. Anz.*, Jena, 1896, vol. xii.

for considering the bipolars of the retina the real optic nerve neurones, they still differ so widely from other peripheral sensory neurones as to belong apparently in a class by themselves. The olfactory, vestibular and cochlear neurones arise from epiblastic cells which probably represent in man the lateral line system of sense organs found especially in fishes. Whatever their origin, the peripheral sensory neurones are all bipolar neurones (this statement assumes, however, that the second layer of retinal cells, the bipolars, are the true optic nerve neurones, as their morphology indicates). Though all peripheral sensory neurones are bipolar, they are not all of the same shape: some are fusiform; most of them are pear-shape. The olfactory, optic (bipolars), vestibular and cochlear neurones are fusiform bipolars, while the cell-bodies of all other peripheral sensory neurones are pear-shape. The stem of this pear-shape



Fig. 9.—Three growing neuroblasts of chick embryo. M. T. Burrows, Plate IV. Jour. of Exper. Zool., January, 1911.

neurone divides T-like into two processes of opposite conduction, and it is a bipolar cell in spite of its adult appearance in man.

I want to emphasize two points concerning these pear-shape cell-bodies: 1. *They are bipolar.* They are commonly called unipolar because of their adult appearance in man; but, as Howell has pointed out in his physiology, they are in reality, bipolar neurones, whose processes are connected with the pear-shape cell-body by an elongated stem in the human adult form, while in the human embryo and in low vertebrates the cell-bodies are not even unipolar in appearance but fusiform. 2. *The peripheral process is a dendrite.* The peripheral processes of these pear-shape cells, which form the afferent fibers of common sensory nerves, are,

unfortunately, called axones with reversed polarity, by many excellent anatomists. This has led to some confusion and is due to a purely anatomical classification, according to mature appearances, which wholly disregards the evolution and physiology of the neurones. According to J. B. Johnston³⁰ (*Nervous System of Vertebrates*) the peripheral common sensory neurones in the cyclostome and amphioxus begin as columnar epiblastic cells which, sending out a pseudopod from the deep end of the cell toward the cerebrospinal axis, becomes a neuroblast. The pseudopod develops into an axone, which grows into the cord or brain. From the opposite end of the fusiform cell-body a second process appears, which is later in point of time than the axone and which grows toward the periphery, forming an afferent fiber of a sensory nerve. This fusiform condition is permanent in both these low vertebrates. In the bony fishes some of these fusiform cells, by shifting of the cell-body, become converted into pear-shape cells, the stem of which gives off both processes. The pear-form cells become more numerous in the successively higher vertebrates—the amphibians, reptiles, birds, and mammals—and in man the common sensory ganglia are almost exclusively composed of pear-shape cells.

The work of Johnston is in accord with the findings of His, who first traced the life history of peripheral common sensory neurones; of Freud, in the petromyzon, Retzius in the mixine, von Lenhossék in *pristiurus*, Levi and Chase in sharks and bony fishes, all of whom demonstrated the complete series from the fusiform to pear-shape cells. In man this evolutionary history is recapitulated as follows:

1. The parent epiblast columnar cell of the neural crest.
2. This cell is converted into a fusiform neuroblast by the sending out of a pseudopod from the deep end.
3. The pseudopod becomes elongated and, as an axone, grows toward the cord or brain.
4. Subsequent to the appearance of the axone, the dendrite grows out from the distal end of the cell toward the periphery, while the axone extends into the cord or brain and establishes central connections. This form of cell-body is permanent in the lowest vertebrates and in the olfactory and acoustic ganglia of man, but in the common sensory ganglia there is a fifth stage.
5. The fusiform cell-bodies are gradually and almost completely converted into the pear-shape cells with long stems.

If, then, the distal processes of these common sensory neurones develop in sequence and point of origin like dendrites in lower animals and in man, if they preserve their primitive form in low vertebrates, and if they conduct toward the cell-bodies in all animals, as dendrites of all multipolar neurones do, we have three reasons for calling them dendrites, viz., the philogenetic, the embryologic and the physiologic. Mere appearances, the mere fact that this distal process of the neurones in common sensory ganglia looks like an axone, should not outweigh this threefold considera-

³⁰ Johnston, J. B.: "Nervous System of Vertebrates," 1906. P. Blakiston's Son & Co.

tion. It would be about as reasonable to call the tree-like axone of a type 2 cell a dendrite. This distal process of a common sensory neurone should be called a dendrite if there were no other reason for it than its conduction toward the cell-body; because that avoids all confusion as to dynamic polarity and harmonizes anatomy and physiology. All dendrites conduct toward the cell-body and all axones carry impulses away from the cell-body. This simplifies the neurone concept very materially and is of great advantage.



Fig. 10.—Sympathetic nerves observed while growing from a section of chick's intestine in saline solution. A. is greatly magnified. From W. H. Lewis and Margaret Lewis. Plate 1. *Anat. Rec.*, January, 1912.

RÉSUMÉ OF THE ANATOMY OF NEURONES.

Neurones are composed of three parts: 1, cell-body, 2, axone, and 3, one or more dendrites.

CELL-BODY. Size. Some are 4 microns in diameter in the olfactory bulb and cerebellum. The large cerebral pyramids measure 40 microns to 60 microns; the Purkinje cells of the cerebellum, 135 microns; and the cells of the spinal ganglia as much as 170 microns.

Shape. The cell-body is fusiform in the olfactory and auditory ganglia and in the retinal bipolars. It is pear-shape in spinal ganglia; pitcher-

shape in the ganglionic layer of cerebellar cortex; in cerebral cortex, pyramidal; and stellate in cerebellar cortex and motor nerve nuclei.

Polarity. 1. Multipolar, as in brain, cord, and sympathetic ganglia. 2. Bipolar, of two shapes: 1, fusiform; 2, pear-shape.

Processes. They are of two kinds; one axone and one or more dendrites. The amacrine cells in the nuclear layer of the retina are not understood, but they probably possess an axone.

Constituents. There are two: 1. Cytoplasm, and 2, Nucleus (Karyoplasm).

1. The *cytoplasm* includes a semifluid ground substance, called neuroplasm, which stains with erythrosin; fibrillæ, with concentric arrangement (stichochrome cell) or net-like form (arkyochrome cell); granular tigroid bodies in the form of cones, wedges and spindles; more or less pigment; the neurosomes of Held, abundant in axone hillock, few elsewhere (stained with erythrosin and methylene blue*) and a centrosome in the archoplasm sphere, sometimes found in cerebral pyramids, spinal and sympathetic ganglia. (Centrosomes were found by von Lenhossék in spinal ganglion of a frog in 1895, by Bühler in the same of a lizard, and by A. Kölliker in pyramids of posterior central gyrus of man. It may be important to the discharge of nerve currents, as well as to mitosis).†

The pericellular investment of Golgi, which may be fibrillar or homogeneous in character or resemble a mosaic of scales, is probably composed of end arborizations of other neurones (Held, 1897).

2. *The nucleus*, composed of karyoplasm, is large and spherical. It is bounded by a nuclear membrane; * it possesses a fine reticulum with but little chromophilic substance, and it contains a very distinct nucleolus, sometimes two or more, which are rich in chromatin. Besides these solid elements, the karyoplasm contains the nuclear juice, called enchylema.

AXONE. The axone is always single and is the first process to develop from the cell-body. It rises from what was originally the deep end of the epiblastic cell, which becomes the axone hillock. It is composed of a semifluid ground substance, called neuroplasm, and of neurofibrillæ. In man the neuroplasm is very scant. The axone is smooth and fiber-like and contains the neurosomes of Held. It ends by multiple division. It always conducts impulses away from the cell-body; it is cellulifugal.

In other points axones present certain variations in different neurones. In *multipolar neurones of type 2*, the axone branches almost immediately into a fine and complex tree-like arborization, often called a dendraxone. It does not become medullated. It ends near the cell-body in the form of free points without anastomosis (except, possibly, in very rare instances). Its endings are in contact with the cell-body or dendrites of other neurones to which it transfers the impulses; rarely there is concrescence (Held).

* There is a second type of these neurosomes that is rod-like in form and is not stained by the erythrosin methylene blue, but with Held's combination of Altman's stain and iron hematoxylin. These bodies are identical with the *mitochondria* (E. V. Cowdry, Anat. Rec., January, 1912).

† According to Nansen, Bensley, Cowdry et al. cytoplasm contains a series of intercommunicating canals, the osmotic canals of Bensley, Jour. Anat., 1911, xii, 3.

In *type 1 of multipolar neurones*, the axone is long and usually enters into a tract or a nerve. Its diameter is proportionate to its length. It gives off collaterals at right angles and axone and collaterals usually end in the form of a tuft or tassel. Axones in the nucleus of the trapezoid body end in the form of cups (acoustic cups), while they form parts of motor end-plates in the peripheral motor neurones. Excepting the sympathetic ganglion neurones, both the axone and its collaterals become medullated at different times, coincident with the beginning of function. Collaterals rising proximal to where the axone becomes medullated remain naked. The medullary sheath begins a short distance from the cell-body

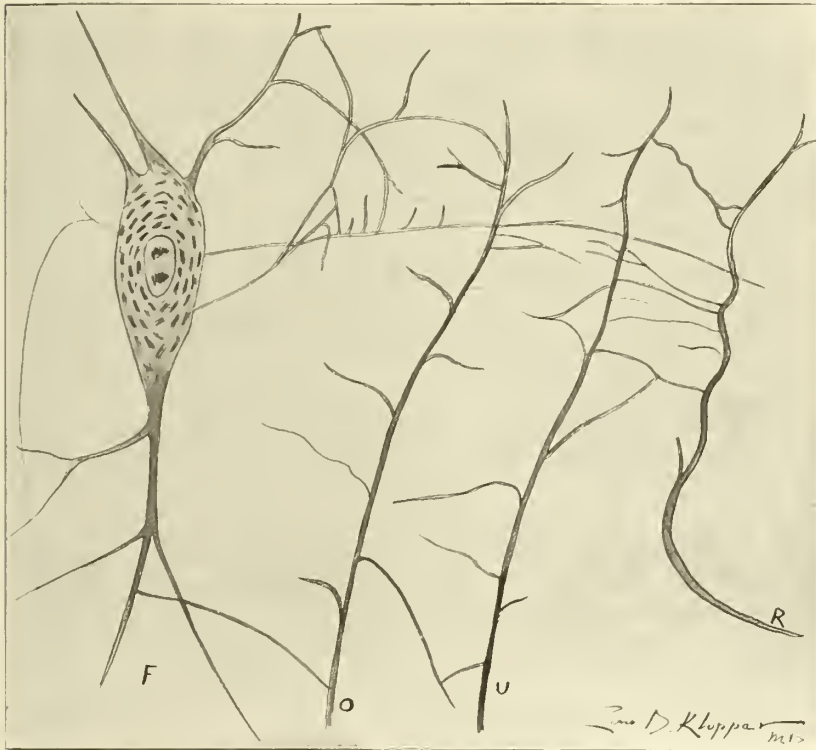


Fig. 11.—Four sympathetic nerves from chick's intestine growing in saline solution. Plate 11. Lewis and Lewis, *Anat. Rec.*, January, 1912.

and terminates shortly before reaching the end-tuft. The medullation is continuous in the optic nerve and in the brain and cord, and the medullated fibers are imbedded in neuroglia; but in peripheral nerves the medullary sheath is divided into segments, from 0.1 mm. to 1 mm. long, by constrictions called the nodes of Ranvier. The Schmidt-Lanterman lines, seen in the medullary substance, are probably artefacts, though Capperelli considers them unstained membranes connecting axolemma and neurolemma.³¹ The neurolemma (sheath of Schwann) is a nucleated

31. Caparelli: *Arch. f. Mikr. Anat. u. Entwickl.*, 1905.

sheath surrounding the axis-cylinders of peripheral nerves; it invests the medulla of medullated nerves but does not extend into the brain or cord.

A sheath of nucleated cells, similar to the neurolemma, surrounds small bundles of olfactory nerve fibers, instead of individual axones. In many peripheral nerves there is a fibrous sheath external to the neurolemma, called Henle's sheath. Collaterals rise at the nodes of axones having segmented medullation; they leave the axone at right angles. The end-tufts of axone and collaterals form contacts with another neurone, a muscle cell, or a gland cell, to which they transmit their impulses.

Bipolar neurones, which are peripheral sensory neurones, have axones that present some peculiarities. The axone is joined to the dendrite for some distance from the cell-body, the two forming the common stem of a pear-shape cell. Exceptions to this arrangement are three in number, viz., olfactory neurones, retinal bipolars and auditory ganglia neurones, in which the cell-bodies are fusiform and the axone and dendrite rise from opposite ends of the cell. In the pear-shape bipolar the axone and dendrite form T-like branches. The axone is medullated, except in olfactory nerve neurones. The medullation is segmented and invested with a neurolemma from the ganglion of origin to the cerebro-spinal axis, but no nodes are present within the brain and cord, and no neurolemma. Upon entering the cerebro-spinal axis the axone divides T-like into an ascending and a descending branch, the stem and both arms of which give off collaterals at right angles; and all terminate in relation with neurones inside the cerebro-spinal axis, to which they transmit their impulses.

DENDRITES.—Dendrites always develop after the axone. They may be one, two or many of them given off by the cell-body. They originate from the external end of the epiblastic cell (that is, it was external before the formation of the neural tube). They conduct impulses toward the cell-body, so are cellulipetal in function.

As to structure in their mature state, there is marked contrast between the dendrites of multipolar and bipolar neurones, though all are alike in point of origin, developmental sequence, and direction of conductivity.

Multipolar neurones have two or more dendrites. The Purkinje cells have two which ramify in a wide dendritic plane, other multipolars have many dendrites: they may rise equally from almost all parts of the cell-body, as in the peripheral motor neurones; there may be one large apical dendrite with many small lateral and basal dendrites, like most of the cerebral pyramids; or the basal dendrites may be so numerous, so richly branched and dependent as to form the tassel-like cells characteristic of olfactory cortex. These dendrites are protoplasmic in character, like the cell-body. They contain tigroid bodies, neurofibrillæ and a very few of the neurosomes of Held. In contour they are irregular, often presenting varicosities which are not understood. These dendrites branch at acute angles, manifoldly and tree-like in most neurones, antler-like and vine-form in such as the Purkinje neurones of the cerebellum. They possess closely set spines which show with the Golgi stain and Ehrlich's vital stain, especially on the giant cerebral pyramids and Purkinje cells. The dendrites end in the form of free beaded points in contact with other

neurones; seldom if ever do they anastomose with each other or concreate with other neurones in higher vertebrates. They never medullate. They belong to the afferent side of the neurone. *Bipolar neurones* have but one dendrite. It grows out of the distal end of the neuroblast opposite to the origin of the axone. This simple fusiform bipolar persists in low vertebrates and in auditory and olfactory ganglia and retinal bipolars of man; but in common sensory and taste ganglia of man, owing probably to an ameboid shifting of the cell-body during development, the axone and dendrite join the cell-body by a long common stem, the dendrite constituting the distal arm of that T-branched stem, the axone the proximal arm. Excepting in the fusiform bipolars, the dendrite becomes medullated and has the same structure as the axone of a peripheral motor neurone. Its



Fig. 12.—A plexus of sympathetic nerves growing in chick's intestine immersed in saline solution. From Plate III. Lewis and Lewis. *Anat. Rec.*, January, 1912.

neurolemma is continued over the cell-body and axone to the surface of the brain or cord. It forms the axis-cylinder of a sensory nerve fiber. Its ending is usually tassel-like and is either free or encapsulated in a sensory end-organ. In the retinal and auditory bipolars and in some of the taste neurones it forms contacts with specialized neuro-epithelial cells. Some dendrites of peripheral common sensory neurones end in the form of cup-like expansions, called tactile discs, which are in contact with ordinary epithelial cells. All dendrites conduct toward the cell-body, but may transfer the impulse to the axone in the common stem of the pear-shape bipolars, as was shown by Bethe in a crab after removing the cell-bodies.

THE SIGNIFICANCE OF THE NEURON CONCEPT TO
PHARMACOLOGY *

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The promulgation of the neuron concept resulted in an attempt by pharmacologists to localize, as precisely as possible, the point or points at which neurons are attacked by drugs; and we know that, so far as available evidence goes, drugs attack the neurons at their ends. The ends of the neurons seem to be much more sensitive to drugs than any other portion of the nerve cell. When, for instance, an animal is completely paralyzed by ether, the nerve fibres are still perfectly capable of conducting impulses, as can be shown by means of electric stimulation. When an animal is convulsed by strychnin, a limb protected against the poison by preliminary ligation will be convulsed in exactly the same manner as the unprotected limbs; and no difference is discoverable between the nerves and muscles of the protected and of the unprotected limb. Many other instances could be adduced to show that the nerve fiber is not affected in the general or systemic action of drugs. Of course, when a drug is applied to a nerve directly, as is done in the use of cocaine as a local anesthetic, and as might be done by exposing a nerve directly to the action of ether vapor, then an effect upon the nerve fiber is produced; but such effects are not obtained when the drug is distributed throughout the system by means of the blood current.

It can also be shown that it is not necessary for the cell body to be affected for the production of drug effects. That the sensory nerve cell body is not necessary for the production of strychnin effects, is proved by the fact that convulsions may be elicited by stimulation of the posterior root above the ganglion, or after extirpation of the ganglion. Nor does the motor nerve cell body have to be poisoned: for, if the cerebral half of the exposed spinal cord of a frog be poisoned with strychnin, while the caudal portion be not, convulsions may be obtained in the hind limb as well as in the fore limb by touching the latter, while touching the hind limb produces merely an ordinary reflex movement of the leg, showing that the motor neurons of the latter are unpoisoned. By a similar experiment it may be shown that ether or chloroform do not effect the motor cell. For, if the caudal portion of the spinal cord be protected against the action of chloroform by destruction of part of the pia mater, while the cerebral portion of the spinal cord is exposed to the anesthetic, reflex movements may be elicited in the anterior as well as in the posterior half of the body by irritation of the sensory nerves of the protected area, while irritation of the sensory nerves of the area exposed to the chloroform has no effect. In other words, the motor neurons of the poisoned area are still capable of responding to excitation from distant sensory nerves, at a time when excitation of their poisoned sensory nerves has no such effect. The effect then must be produced upon the endings of the

* Read before the West Side Branch, Chicago Medical Society, March 8, 1912.

sensory neuron as it enters the spinal cord, rendering impermeable to stimuli the first synapse that an afferent impulse must pass. These experiments also demonstrate that the synapses immediately around the motor cell body are not necessarily poisoned in order to obtain the effect; and suggest the existence of at least one neuron intercalated between the sensory and the motor neurons.

We have seen that there is reason to believe that the effect of strychnin and of the anesthetics is exerted on the centric end of the sensory neuron. Inasmuch as it has been shown that this centric end is to be regarded as the end of an axon, while the peripheral end corresponds to the dendrites, it appears that the end of the axon of the sensory nerve cell is the portion that is first and most easily affected by certain drugs. While the peripheral sensory nerve endings are easily affected by drugs applied directly to them, there are only very few instances known (aconite and veratrin poisoning) in which these seem to be affected during the systemic action of a drug.

In the case of the motor neuron we know that it is the peripheral end, i. e., the end of the axon, that is most easily affected by drugs, as can for instance be shown by the following experiments with curare. If a frog's muscle with its nerve be separated from the body; and the nerve fiber, but not the muscle, be immersed in a solution of curare, the nerve will still conduct electric stimuli to the muscle. If, however, the muscle be immersed in this solution, even though the nerve be not, the nerve will have lost its effect upon the muscle, for the muscle will not contract on electric stimulation of the nerve. Still, remarkable to relate, the muscle will respond to the electric current, if the electrode be applied directly to it. It therefore must be the connecting link between the muscle and the nerve fiber, the endings of the axon, that is acted on by curare. That the cell body and the dendrites are not affected, may be proved by protecting one limb against the poison by ligation and introducing the poison into the general circulation. It will then be found that the protected limb is capable of responding to reflex excitation, at a time when all the unprotected muscles of the body are paralyzed. From these observations and numerous others that might be cited, I venture to advance tentatively the following generalization: the termination of the axon of both sensory and motor neurons is the part that is most easily affected by drugs.

Pharmacology, by revealing differences in the chemical composition of neurons, is capable of advancing our knowledge regarding the nervous system in certain directions unapproachable to anatomie study. It seems fair to assume that, if some neurons react with a drug while others do not, there must be a difference in chemical composition. Especially striking are the chemical relations of the neurons of the autonomic or vegetative nervous system. While, for instance, the ganglion of the posterior root is not affected by nicotin, this drug paralyzes all the ganglia of the autonomic system, so that stimulation of the preganglionic fiber fails to produce the response it evoked before the application of the nicotin, while stimulation of the postganglionic fiber still does. By means of this method of experimentation, it has been shown that all the fibers of this

system are interrupted in a ganglion cell once, and only once. It can further be shown by means of pharmacologic reactions that the vegetative nervous system may be subdivided into two portions, which may be called the sympathetic proper and the cranio-sacral autonomic systems, respectively, the latter including all those autonomic fibers that are not connected with the sympathetic trunk. To the cranio-sacral autonomic system belong the short ciliary nerves supplying the sphincter iridis and the ciliary muscles; the secretory nerves of the salivary glands of the chorda tympani; the secretory and vaso-dilator nerves of the trigeminus, the facial and the glossopharyngeal which supply the mucous membranes of the head; then the vagus nerve, with its inhibitory power over the heart, its constricting effect upon the bronchial musculature, its motor impulses to the esophagus, stomach and intestine, and its influence over the secretions of stomach and pancreas; and, finally, the fibers of the sacral nerves that supply the lower portion of the intestine, the bladder and the sexual organs.

The chemical unity of the sympathetic nerve endings is shown by the fact that they all respond to that great hormone epinephrin (adrenalin), which stimulates where they stimulate, producing vaso-constriction, acceleration of heart beat, and dilation of pupil; while it inhibits where the sympathetic nerves produce inhibition, namely, in stomach, intestine and bladder.

A single notable exception is found in case of the secretory nerves to the sweat glands, which, though belonging to the sympathetic nervous system, react pharmacologically with the cranio-sacral autonomic system. The chemical unity of the latter system is shown by the paralyzing effect exerted on its endings by atropin, hyoscin and hyoscyamin, and by the stimulating effect upon these same nerve endings produced by pilocarpin, physostigmin and muscarin. In this manner, for instance, does atropin lessen the secretions of the body in proportion to their dependence upon nerve supply; the salivary and the sweat glands being most affected, the gastro-intestinal and the mammary glands less, and the liver and the kidney least. Pilocarpin, on the other hand, stimulates the secretions to the same degree in which they are stopped by atropin.

All the effects of drugs upon the nervous system may be reduced to modification of function in one of two directions: stimulation and depression. The neuron concept enables us to picture to ourselves the changes that probably occur to bring about these modifications. The ends of the axons are affected in such a way that they are rendered either more or less permeable to stimuli. When they are more permeable, we speak of stimulation; when they are less permeable, we speak of depression. While amoeboid movement of these endings, i. e., protrusion or retraction of them might be the manner in which these changes in permeability are brought about, we might, in view of the lack of proof of such amoeboid movement, also imagine changes in the lability of these nerve endings, analogous to the changes produced by the galvanic current in nerves: namely, the increased excitability produced at the negative pole (cate-

lectrotonus), and the decreased excitability at the positive pole (anelectrotonus). The great complexity and variety of drug effects is due, on the one hand, to the great complexity of the structure and the functions of the nervous system and, on the other hand, to differences in chemical affinity.

THE INFLUENCE OF THE NEURON CONCEPT IN NEUROLOGY *

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Fortunate, indeed, are we to have heard this evening this masterly presentation of the neuron concept by Dr. Santee, and I hope the author will mail to every one of us a reprint of his essay. It is a lamentable fact that in the rush and insistence of practice most of us neglect the pure science of our profession, and too often fail to consider the importance of the biologic sciences. Many men never attempt to keep up with the advances of histology, physiology, chemistry, and pharmacology. They try to flounder along with the hope of doing a modern practice on the basis of an ancient science.

A few years ago I persuaded the neurologic society to devote at least one meeting of the year to normal neurology and now the meetings of the Chicago Neurological Society with the Biological Society of the University of Chicago constitute one of the most interesting and profitable of all the year. No man can expect to do the best sort of practical work who is indifferent to the scientific principles underlying that work; and if one finds his results are unsatisfactory in the practice of any department of medicine, such as neurology and psychiatry, he should suspect that perhaps he is deficient in the elementary and newer science that underlies that branch of medicine. There is a curious notion abroad that somehow theory and practice are antagonistic, and to many men the words theory and hypothesis mean something imaginary, unreal, and of very little use in the active affairs of life. If such individuals would but give the subject a moment's serious thought they would see that practically their whole life, with all of its activities, is largely a matter of theory. It is the theory of gravitation that gives stability to the calculations of astronomy and all of its subsciences, such as navigation, meteorology, and everything that has to do with our physical world. The level and the plumb-level, in all their modes of practical application, depend on the principles of gravitation for their validity. Hydraulics passed from the realm of mere observation to that of an exact science after the principles of gravitation had been worked out. And yet to this day the theory of gravitation is only a theory—no man being able to swear that attraction and not some other force controls the movements of the universe.

Chemistry is an exact science only by reason of its dependence on the atomic theory. Without some such theory it would be to-day nothing

* Discussion, by invitation, before the West Side Branch of the Chicago Medical Society.

but the haphazard observations of the alchemists. A theory or hypothesis is a generalization whereby a great mass of seemingly disjointed, disconnected, unrelated observations are brought into harmony and relationship with one another, and the whole shown to be subject to certain fixed and dependable laws. Such is the *neuron theory*. Since its promulgation by Waldeyer and its detailed modifications by many later investigators, neurology has advanced from a conglomerate mass of unexplained observations to the position almost of an exact science.

As you have just heard from Dr. Santee, there is no longer any question as to the acceptance and value of the neuron theory. With even greater assurance than in 1905, I may be allowed to repeat what I then wrote: "The neuron doctrine is now an accepted fact. Its teachings have done more to illuminate the dark places of neurology than has any single scientific generalization heretofore promulgated. In spite of the fact that in regard to many of its details much has yet to be learned, the main principles which it lays down are universally acknowledged to be scientifically accurate and practically useful."

Now that the tremendous and sometimes bitter conflict between the neuronists and antineuronists has all but completely died away, it behooves us to perfect the details of the doctrine and to apply it to the purposes of clinical neurology. I am asked to point out briefly how the neuron doctrine aids us in the field of clinical neurology, than which I cannot conceive of a more grateful task. If the neuron concept were of no practical value clinically, its consideration would be of no importance to us as practitioners. But it is of immense value clinically, and I venture to assert that without a knowledge of its general principles one cannot today diagnose and treat intelligently the diseases of the nervous system. To-day the neurologist thinks of his cases in terms of the neuron concept. He wonders how his predecessors ever explained the multifarious functions, the local, limited, and dissimilar phenomena of both the healthy and the diseased nervous system on the basis of a uniformly continuous apparatus. If the nervous apparatus were a single uniform organ, like the circulatory apparatus, and as some recent opponents of the neuron theory have tried to show, it would require much imagination and forced logic to account for the manifestations of psychosis and neurosis, of paralysis and spasm, of hyperesthesia and anesthesia, of atrophy and hypertrophy in the same patient at the same time and often in closely related parts.

Even the older clinicians recognized such crude differentiations of the nervous apparatus as brain, spinal cord and peripheral nerves, and on this basis erected their classifications of disease. The neurologist of to-day, however, has to almost discard such divisions of the nervous system as the brain, spinal cord and nerves and to rivet his attention on the constituent neurons and their functions, recognizing all the while that these neurons extend from one part of the nervous apparatus to another in such a way as to quite obliterate the old arbitrary lines between brain, cord, and nerves. For the localization of inflammatory and vascular lesions within the nervous apparatus, the terms brain, spinal cord and

peripheral nerves are still helpful, but for the localization of the lesions of the essential parts of the nervous apparatus these terms now possess very little significance. In this way we may agree that for the vascular diseases, whose lesions happen to fall within the general nervous tissue, and which are not really nervous diseases, *per se*, the gross anatomic divisions are still useful; but for the true nervous diseases, whose lesions coincide with the essential nervous elements, these gross anatomic divisions prove to be worse than useless. They are sometimes absolutely misleading. As the latter constitute the true and essentially nervous diseases, it is clear we must adopt some other basis than brain, cord, and nerves whereon to classify them. It is just here where the neuron concept comes to our aid and establishes its overwhelming importance in clinical neurology.

As Dr. Santee has clearly pointed out, the dominant idea in the neuron concept is the physiologic, if not wholly anatomic, unity and integrity of each and every neuron. The cell-body with its various processes is the unit of the nervous system. This unit, as neuron, lives, moves and has its being in a way independent of all the other units. It is in touch, by contiguity, or, as there is some reason to believe, by partial continuity in some instances, with other units. This has been gone into so fully by the essayist that I need not repeat it. I refer to it again merely because I want to emphasize the fact that the value of the neuron concept in clinical neurology rests wholly in this relative isolation of the neuron.

The functions of this unit of the nervous system are twofold, namely, *self-nutrition* and *excitability*. The latter is, of course, secondary to and dependent on the former. Just how the neuron nourishes itself and maintains its excitability the physiologists are still endeavoring to find out.

The important fact, however, for the clinician to remember is that self-nutrition must be maintained in order that the neuron may exhibit its highest degree of neurility. To maintain this self-nutrition the neuron must have a good start in life (heredity), must be furnished with proper pabulum (normal blood free from toxins), must be protected from physical hurt (traumatism), and must be subjected to sufficient but not too much stimulation (exercise). There you have in one sentence the whole of neurology, with a full and complete picture of its etiology and pathogenesis. Let any one of the above requirements be varied ever so little and the neuron will begin to fail in respect to the function of self-nutrition and, of course, of excitability. The variation may be so slight that we may denominate the disease a functional one, or it may be so great that the neuron may undergo a complete change, disintegrate, and ultimately disappear. This is what is meant by chromatolysis. Chromatolysis, a neuronie phenomenon, constitutes the pathologic basis of clinical neurology. The terms that we employ to express the different degrees of chromatolysis indicate merely the relative powers we possess, with microscope and stain, to detect the chromatolytic changes within the neuron. If, then, our powers are inadequate and we can detect no evidence whatsoever of chromatolysis we call the symptomatic manifestations

of it functional; when the chromatolysis is so great that the neuron is ultimately destroyed, we attribute the manifestations to atrophy and denominate them paralytic. Between these extremes are all degrees of neuronie change and symptomatic manifestation.

I need hardly describe to you to-night the chromatolytic changes within the neuron. You will recall that the cell-body first swells, then shrinks, and that it shows a tendency to become serrated about its edges (serration). The nucleolus disappears; the nucleus grows smaller and moves to one side of the cell (decentralization). The Nissl or chromatolytic bodies vanish, leaving but a small substance closely hugging the diminished nucleus. Spaces appear in the cell substance (vacuolation). Degeneration of the familiar Wallerian type occurs in the axon, thus completing the destruction of the neuron and leaving a vacancy, to be sooner or later filled in with neuroglia and connective tissue.

The damage of the neuron is the basic factor in the pathology of the nervous diseases. In classifying these diseases to-day we lay much stress on the damaging agents and the location and function of the individual neurons or groups of neurons affected. For example: When heredity is the uppermost etiologic factor we refer the malady to the familial group of troubles and assign it to this or that class, according to the particular groups of neurons that happen to break down first. Friedreich's ataxia and amaurotic family idiocy are good examples of hereditary defectiveness. For such maladies Gowers has coined the word *abiotrophy* to explain their pathogenesis.

To a lesser degree heredity, in all probability, acts similarly in many other maladies, as for example, hysteria, congenital neurasthenia and psychasthenia, multiple sclerosis to some extent, and dementia præcox. When intoxication is the dominant etiologic factor, the clinical manifestations of it become so numerous that we are perforce obliged to classify them, if we classify them at all, almost wholly in accordance with the grouping of the neurons involved. In this way tabes dorsalis, general paresis, spastic spinal paralysis, progressive muscular atrophy, multiple neuritis are all illustrative of various forms of intoxication acting on different groups of neurons. In all probability the same may be said, less positively, however, of such maladies as Sydenham's chorea, idiopathic epilepsy, the neuralgias, Parkinson's disease, etc.

When traumata are the immediate cause of the damage to the neurons we are so impressed, as a rule, with the overwhelming force and grossness of the causative factor that we speak of the contusion, the hemorrhage, the tumor or what not more than we do of the neurons which are implicated and which give rise to the symptoms whereby we establish the diagnosis.

Without occupying more time with illustrations, I think it must be clear to all that it is the pathology of the neuron (chromatolytic degeneration) that underlies clinical neurology; and that this pathology is the result, more or less, of neuronie malnutrition provoked and maintained by bad heredity, intoxication, and traumata. No such comprehensive generalization of the pathology of nervous diseases was ever dreamed of

before the days of the neuron doctrine. Hence in giving us a clearer conception of the pathogenesis of nervous diseases, the neuron concept has been and is of the most vital importance. It has put clinical neurology on a firmer and more scientific foundation.

The conception of the nervous system as an aggregation of relatively distinct and separate units, the neurons, and the discovery of the physiology and pathology of these units constituted a remarkable advance on anything like it that had gone before. It was distinctly an advance in the line of generalization, which is always the ultimate goal of scientific investigation. It systematized, unified, and defined the disease processes within the nervous system and has been of incalculable assistance in the diagnosis and treatment of nervous diseases.

But the neuron concept has done more than emphasize the neuron as the anatomical and physiologic unit of the nervous apparatus and concentrate, much to the advantage of neurology, investigators' attention on the latter. It has given us a wholly new picture of the structure—architecture, as it is happily called—of the entire nervous system. It has revealed to us an orderly arrangement and apposition of the innumerable neurons, one with another, and shown that the complicated anatomy and confusing physiology are not without an explanation. *Much, of course, has yet to be learned in regard to this functional interplay of neuron on neuron, but what is already known about it proves to be so wonderful, apparently so true, and positively so far in advance of anything heretofore conceived of in nervous physiology, that we seem to have discovered almost a new organ in the body. In solving thus the complex structure of this organ and accounting for its great variety of functional manifestations, the neuron concept has again conferred an inestimable benefit on clinical neurology. Time is short and it is beyond my province to-night to describe, or even to illustrate as fully as I should like, this neuron architecture of the nervous system. Suffice it to say, that it forms the foundation of every work on nervous physiology, and when ignored in a treatise on clinical neurology the latter becomes thereby less useful, if not positively confusing, to the general reader. I shall stop to present only one and that the simplest of many illustrations of how the neuron architecture of the nervous system aids us in clinical neurology.

As everyone knows, or ought to know, the motor path along which an efferent impulse travels in its course from the brain to the muscle is made up of two (some think three) long neurons placed end to end. Of course it is understood that I use the term neuron for groups of many neurons. The upper neuron has its cell-body in the Rolandic area of the cortex while its long axon extends downward through the pyramidal tracts to terminate in an arborization around the cell-body of the lower neuron resting in one of the anterior horns of the spinal cord.

The lower neuron has its cell-body in one of the anterior horns of the cord, while its axon extends out through the anterior spinal root into the corresponding nerve and so on to the end-plate in some muscle.

Now for clinical purposes it should be carefully noted that these two neurons, upper and lower, though apparently alike in structure and general function, exert their powers on wholly different structures. The upper neuron stimulates the lower neuron, or more probably several lower neurons; the lower neuron stimulates only the muscle with which it is conjoined. This at once makes clear the reason for the dissimilarity in the clinical pictures of a spastic and a flaccid paralysis. In the former, for instance, the paralysis is in the movement, for the execution of which several muscles may have been necessary; in the latter, it is the individual muscle that is paralyzed. The former is characterized by a certain amount of muscular rigidity, reflex exaggeration, possibly clonus, absence of muscular wasting and preservation of the normal electrical reactions; the latter by muscular flaccidity, reflex diminutions, absence of clonus, presence of muscular atrophy, and appearance of the electrical reactions of degeneration. Think for a moment what this means and note how far removed our ideas of disease wherein these groups of phenomena occur are removed from the ideas of our predecessors. When we say, as we rightly do, that the spastic group of symptoms indicates a lesion of the upper neurons and that the flaccid group a lesion of the lower, we are doing more than simply locating the lesion. We are talking and thinking in terms of the neuron concept. We are discussing not the diseases of the brain, spinal cord or nerves, but the diseases of the neurons, "neuronic diseases," so to say. As these neurons pass interchangeably from brain to cord and from cord to nerves, regardless of the old anatomical lines of division, brain, cord and nerves are quite unimportant as topographic terms for these neuronic diseases. So far as the spastic palsy with its usual accompaniments is concerned, a tumor of the brain resembles clinically a tumor of the upper part of the cord. So far as the flaccid palsy with its accompaniments is concerned a degenerative inflammation of the peripheral nerves is the same clinically as a degenerative inflammation of the anterior horns of the cord. In both instances it is the respective neurons involved which must be thought of and not the brain, cord or nerves. If a still closer localization of the lesion is called for, it must be made on the association of neurons with different functions. In a word, it is the neurons, singly and in groups, that serve as the guide-posts, and not merely the brain, cord and nerves, in forming the diagnosis in modern neurology.

On the afferent or sensory side of the nervous apparatus the same revolution has taken place in our ideas of the nature of disease and of disease manifestations. Among the special senses some remarkable revelations have already been made and some most illuminating explanations offered for phenomena hitherto quite confusing. The whole category of visual disturbances may be cited by way of illustration. The aphasias and, in fact, the entire subject of cerebral localization, are becoming more and more a question of the neuronic architecture of the encephalon. How comprehensible is the phenomenon of sensory dissociation as we behold it in syringomyelia and other diseases, in the light of the neuronic construction of the nervous system! Would that I had another hour to point

out further how invaluable the neuron concept has been to clinical neurology! But without testing your patience to the limit, I feel enough already has been said to demonstrate how now in a large measure and how, perhaps, wholly so in the near future, clinical neurology will be the science of the neuron and the application of that science to the cure of neuronie diseases.

Even in psychiatry, perhaps the most obscure and confusing of all the departments of medicine, the neuron concept is shedding, though feebly as yet, a ray of light. For example: No one believes now in the so-called ameboid movement of the neuron as it was at first taught, but nevertheless it is quite generally thought that the appearance and disappearance of certain psychic symptoms as, for instance, memory, are in some cases due to a separation and approximation between interrelated cortical neurons. Hysterical symptoms have been attributed to some such process. At the synapse, as it is called, the place where one neuron approximates another, there is something in the way of a special structure, reaction, or movement, physical, chemical or functional, that exercises a most important rôle in the associating and correlating of one neuron with another. Sherrington has pointed this out in a most scientific and satisfactory way. Though we are still much in the dark as to this whole subject of interneuronic influence, we know enough already to see that along the lines laid down by the neuron concept must all future investigation proceed to solve the functions of the brain, both in psychology and psychiatry. Rich, indeed, is this whole subject for the physiologist, the philosopher and the clinician.

It is the neuron concept, like a new and revised chart to the mariner, that will guide the good ship of neurology into a straight and definite course and bring her at last into the harbor of scientific accuracy. The neuron concept was a stroke of genius. Its far-reaching influence for good, on account of the precision which it gives to our practice, is only beginning to be fully appreciated.

THE SIGNIFICANCE OF A PATIENT'S REACTION TO THE INTRAVENOUS ADMINISTRATION OF SALVARSAN

E. D. HOLLAND, M.D.

HOT SPRINGS, ARK.

We had no sooner begun the intravenous administration of salvarsan than we noticed the great difference in the reaction of patients, which we at first thought was due to the susceptibility of the individual. One patient would have a temperature of 102, be nauseated, have a chill and vomit, while another under the same conditions of administration would not be nauseated or have a chill and would have a temperature of only 99 or less.

We soon began to suspect that the degree of the patient's reaction was an indication of the activity of his infection, but there were several plausible explanations advanced by prominent physicians who accounted for this reaction in other ways.

One of the most plausible of these explanations was to the effect that there was a difference in the water with which the physiologic salt solution was made, the idea being that any water, distilled or otherwise, would accumulate fungi if allowed to stand, and that the reaction was a result of the toxemia induced by the liberation of toxins from these dead fungi. Consequently, no matter how freshly boiled a distilled water might be, one might have a reaction unless the water had just been distilled. Also with freshly distilled water there should never be any reaction, no matter what symptoms of syphilis the patient might show. This is one of the most reasonable hypotheses advanced, the only objection being that it does not work out in practice.

As indicated above, our conclusions are different, and I wish to give our experience and reasons for believing as we do.

I will not go into the details of the many different reactions which led us to suspect that salvarsan was not only a specific, but also a diagnostic and confirmatory agent of the first class, but will give our results and the experiments we tried in confirming our suspicions.

October 5, 1911. I gave four doses of "606" intravenously to four patients as follows:

1. Mr. P., syphilis of four years' standing. I had treated patient three years ago, and had given him an injection of "606" Sept. 20, 1911, to which he reacted strongly. Patient was in good condition, had no eruption, sore mouth or other indications of the disease. At 10 a. m. I gave patient a second intravenous injection of salvarsan. Patient's temperature never went above 99; he was not nauseated, had no chilly sensations and ate a full dinner that evening, feeling as well as ever.

2. Mr. Pe., had syphilis for several years, taking just enough treatment to keep the symptoms from bothering him. Very much run down, pains in shoulders and back. I gave him "606" at noon and at 6 p. m.; temperature was 100.5. He was slightly nauseated, could not eat anything and had had a slight chill. Patient felt badly all the next day.

3. Mr. E., has had syphilis for one year. Actively infected, with an eruption that continues to break out unless patient constantly takes mercury in large doses. I gave patient "606" at 2 p. m. He was nauseated in an hour, vomited, had a severe chill, temperature reached 101 and he was weak and sick for two days.

4. Mr. C., tertiary syphilis of two years' standing. Had taken a great deal of treatment before coming to Hot Springs, and had taken vigorous treatment for five months after his arrival. Wassermann reaction still slightly positive. I gave patient "606" at 5 p. m. He had a good night's sleep, no nausea or vomiting or chill. Had a temperature of 99.2 at 10:30 p. m. and felt as well as ever the next day.

This test itself was enough to show that it was not the water or any peculiarity of the medicine or technic of administration, as all of these cases were treated the same day and under exactly the same conditions. We have our own still, consequently our water is standard, as we always distill it as we are going to use it.

With the object of proving that the toxins of the water are not the cause of the patient's reaction, I made some distilled water and allowed it to stand in my office for ten days, then boiled and used it to give an intravenous injection of salvarsan to a patient whom I had treated with salvarsan three weeks before, and had had on the inunctions of mercury in the meantime. His temperature reached only 98.8 at its highest, showing that the disease was pretty well eliminated, or he would have had more reaction, and also showing that the water alone would not cause it.

I have given salvarsan to one patient who had eczema and no trace or history of syphilis, and he did not have a sign of reaction. I might add that this patient had practically stopped itching in three days from the time he took it, and his eruption faded out at least half in a week. As I treated him only a week ago I cannot give the results except that he is doing exceptionally well and has had no other medication internally or externally, except "606."

We have given over fifty people a second injection of "606," as we prefer to do so in nearly all cases, and we have never had a patient's temperature go above 99.5 with the second injection, and usually it does not reach 99, while a few patients do not have any reaction to this injection at all.

This diminished reaction holds good even with the intramuscular injection to a large extent, as the patients never have as sore a hip from the second injection as from the first.

In one instance where I had two patients waiting to take "606," I mixed the solution for both at the same time and gave the injections fifteen minutes apart. One of these patients was just breaking out with the secondary eruption and had a very violent reaction, while the other was a man who had taken "606" while in Panama five months before and had been rubbing mercury since and he was not at all sick.

We have drawn some conclusions from the above and from the 300 other cases we have treated with "606" and are able to rely on them.

We believe that the patient's reaction is due to the toxins liberated by the killed *Spirocheta pallida*, and that it is an absolute indication of the intensity of the disease.

We are able to tell our patients about how violent a reaction they will have by examining them, and can tell them whether it will be necessary for them to go to a hospital and if so how long they will have to remain there. We can tell them whether they are going to have a chill, be nauseated or vomit simply by their physical examination.

We put much more reliance in the "606" reaction than we do in either the Wassermann or Noguchi tests and when we fail to get a reaction with "606" we are very much inclined to think that the patient is cured, although, of course, it is possible for the patient to have some little encapsulated foci that might break out at some future time, or for his disease to be so nearly eliminated that the reaction could not be noticed. However, these drawbacks exist the same with the serum tests.

Taking it for granted that the distilled water is comparatively fresh and that the operation is carried through with absolute asepsis, we might classify the reaction of syphilitic patients treated with an intravenous injection of salvarsan as follows:

First. Those who will have a temperature of over 100, who will be nauseated and have a chill or chilly sensations. Under this head come all active skin and bone lesions that have not been vigorously treated recently.

Second. Those who will have a temperature between 99.5 and 100.5 may be nauseated, but will not vomit. Under this head comes all those who have had syphilis for over a year, just taking enough treatment to keep the disease well under control, but not having taken enough treatment to make a very marked impression on it, and patients who have the early symptoms but have been treated vigorously.

Third. Patients who will not have over one degree of fever. In this group we have all the tertiary cases having no visible lesions, patients who have been well treated recently, patients who have taken one dose of "606" and have not had time to relapse fully, and parasymphilitics.

We give each patient .00375 gm. of salvarsan for each pound of his weight. The amount is easily measured by making a 240 c.c. solution of .6 gm. of salvarsan and giving the patient 1.5 c.c. of this solution for each pound he weighs.

In the intramuscular injection there is no necessity of being so exact, and here we mix our neutral suspension of salvarsan in 10 c.c. of water and give the approximate proportion according to the patient's weight.

Dugan-Stuart Building.

THE USE AND MISUSE OF TUBERCULIN *

WALTER B. METCALF, M.D.

CHICAGO

It must be admitted that the progress in the use of tuberculin has been disappointingly slow, for it is now over twenty years since Koch gave it to the world. In the lingering hostility excited by the memory of ill results in the early days when it was in the experimental stage and often fell into the hands of those who were little conversant with its power, will be found the reason why the medical profession has not given it the place that it deserves as a therapeutic and diagnostic agent.

As a diagnostic agent tuberculin stands in a unique position. We have no other means so safe, so easily applied and so accurate in its findings, save the microscope; the latter, however, has the disadvantage of being of value only after disintegration has begun. As a diagnostic agent tuberculin can be used in such a manner that the results will be positive. If used subcutaneously there can be no error in the findings.

Wolff-Eisner¹ states: "With the subcutaneous application of Koch's tuberculin a positive reaction indicates the presence of tuberculosis."

* Read before the North Shore Branch, Chicago Medical Society, March 5, 1912.

1. Wolff-Eisner: *Serum and Vaccination Therapy*, p. 164.

Allen² states: "If a healthy individual receives an injection, even as large as 100 milligrams of Koch's old tuberculin, no symptoms beyond slight local tenderness will be exhibited."

In making the test I begin with 1 mg. of Koch's old tuberculin, increasing the amount to 10 mg., if there is no reaction from the first dose. The second dose is given at the end of forty-eight hours; the reaction — if there is to be any — will appear within this period of time.

If a person afflicted with tuberculosis be given a very small dose of tuberculin, especially if in an early state, no effects may be noted; but if a larger dose is given, a local hyperemia of the infected area will be noted; this is called the focal reaction. If a still larger dose be given a congestion will follow at the point of infection, with redness and swelling at the point of injection; this redness and swelling is termed the local reaction. If a still larger dose be given there will be some constitutional disturbances, as headache, a tired feeling with heaviness about the limbs, backache, an increased degree of nervousness with a feeling like that of an oncoming cold, the mucous membranes will weep and the pulse will become more rapid. In some cases there may be a rigor with nausea and vomiting, there may also appear a cough that was not present before. The temperature will rise from 1 to 3 degrees; this we call the febrile or general reaction.

The manner of the temperature rise after a test dose is given is very important; the rise should be gradual, with a gradual fall. When the temperature curve is an irregular one, with a sudden sharp rise and fall, it is not a typical reaction.

It is possible to have a focal reaction without a local or febrile one. If the infection is in the lungs it will be found, on examination, that there is an increase in the symptoms as compared with the previous findings. Auscultation will show the presence of râles where none were found before. The examination for the presence of focal reaction signs should be made at frequent intervals during the forty-eight hours following the test, as there is no definite time for their appearance. In cases where the glands are involved, in lupus and throat infections, this focal reaction can be easily recognized.

The presence of tuberculosis is shown by a focal, local and febrile reaction. The presence of only the first speaks for tuberculosis, the first and second are diagnostic and the third indicates an active tubercular process.

The injection should be always given subcutaneously, rather than intramuscularly, and never intravenously. In view of the fact that it is not always convenient to see the patient the day after the treatment, there is an advantage in giving the injection in the arm where the patient can observe the presence or absence of a local reaction.

I have come to look on the amount of redness and infiltration at the local reaction point as a valuable guide in determining the amount to be given as a treatment dose, and also indicative of the curability of the case; a tendency to severe local reactions indicating a favorable prognosis.

2. Allen: *Vaccine Therapy*, p. 190.

The contra-indications for making the test are, first, if definite signs of tuberculosis are present; second, advanced pregnancy; third, grave renal or cardiac lesions.

In acute miliary infections and in the very advanced cases no reaction may be obtained.

As a therapeutic agent for the treatment of tuberculosis, tuberculin has no rival.

The first and immediate effect of an injection of tuberculin is to lower the defensive powers and increase the susceptibility to infection; this is known as the negative phase. Following the negative phase there is a positive phase; during this period the body acquires some resistance to the infection. When large doses are given the negative phase is very marked and may last for weeks; on the other hand, when small doses are given the negative phase is very slight, of short duration, and is quickly followed by the positive phase. In view of the fact that during the continuance of the negative phase our patient is more liable to infection, it is better and safer to administer a number of small doses over a definite period of time, rather than one large dose.

The dose of tuberculin must be given in accordance with the opsonic value of the blood; an excess dose will at once reduce the resistance. A sufficient length of time must elapse between injections. We must wait until all the evidences of the local reaction have passed away.

It is the conclusion of all observers that the use of tuberculin tends to lessen the spread of the disease to new tissue, and it is a powerful factor in bringing about the healing of the lesions. This is due to the increased flow of blood to the infected areas, blood enriched artificially in protective bodies to take the place of the stagnant serum, which has been robbed of its protective properties by long contact with the bacilli. The focal hyperemia resulting from the use of tuberculin produces a tendency to rapid fibroid tissue formation.

Tuberculin acts definitely on the fever and the pulse-rate; the cough is at first increased, with more profuse expectoration, followed by a marked improvement. The bacilli if present become less numerous and finally disappear.

For the first treatment dose I usually give $\frac{1}{15000}$ mg. of Koch's old tuberculin subcutaneously, and watch the temperature index. If the mean temperature for the following forty-eight hours is 0.1 degree above the normal for the patient, or if there is a local reaction, as redness and swelling at the point of the injection: or if there is headache and general lassitude, it is evidence that the dose given is too large. We should wait at least one week and then give, say, $\frac{1}{20000}$ or $\frac{1}{30000}$ mg.; in this manner we can soon determine the proper treatment dose. The dose each time should be the largest one that can be given without causing a reaction of any kind: it should be given in gradually ascending doses: but always keep below the reaction point.

In using tuberculin for either diagnosis, treatment or immunization, I always make the dilutions fresh every day using distilled water as the diluent.

I consider Koch's old tuberculin to be the best and use the product that is made in Germany under governmental supervision. It is my custom to give two treatments each week, believing that two or even three small doses each week are better than one large dose.

Tuberculin has a definite immunizing power. It has been shown conclusively — clinically and experimentally — that an active immunity can be produced. In the presence of active immunization the immunity is but slowly acquired and it is not firmly established until the treatments have been carried on over a period of many months. The time required and the duration of the immunity are as yet not definitely established. I believe that the treatment should be carried on for from six months to one year; if this is done I believe that the immunity will last for a number of years. If we were only able to produce a fraction of a degree of immunity, is it not worth trying when it is known that no harm can come from its proper use, especially if these protective measures are carried on during the time when there is present in the family a case of active exfoliative tuberculosis? The other members and more especially the children, if any, should be given tuberculin.

Von Bering³ states: "I estimate that vaccination of children is possible by the subcutaneous injection of a substance containing no living bacilli."

Koch⁴ states: "Immunity is conferred in about three months and lasts at least one year."

von Ruck⁵ states: "We believe that the therapeutic value of tuberculin depends on the conferring artificial bactericidal immunity."

Crofton⁶ states that he believes that a short course of tuberculin, in small and progressive doses, will confer permanent immunity.

It is but natural that an agent having so many uses should at times be misused. I am convinced that the most common misuse of tuberculin is the faulty administration. It is an agent powerful for both good and evil; if enough is not given, our patient will be robbed of many of his chances for recovery, and if on the other hand too much is given, great harm can be done. To arrive at the proper dose requires a great deal of skill, patience and experience. Whenever my patient under tuberculin treatment does not improve I look first to the tuberculin for the cause and at once try to so adjust the dose that there will be an improvement. We can rarely give two patients the same dose, there must be a strict individualizing. It is hard to give accurate directions even in a given case, the dose must be determined by the character of the reactions. There are many minute details that enter into the proper administration of tuberculin; if these are overlooked or neglected damage may be quickly done.

From my experience and observation I am convinced that a great deal of harm has been done with tuberculin, is now being done and will

3. Allen: *Vaccine Therapy*, p. 67.

4. Allen: *Vaccine Therapy*, p. 154.

5. von Ruck: *New Clinical Therapeutics*, Crofton, p. 125.

6. Crofton: *Brit. Med. Jour.*, September, 1906.

continue to be, until the profession comes to a full realization of the dangers that attend its faulty administration.

Osler⁷ states: "Tuberculin is a most powerful agent and demands the greatest care in its administration. All physicians who are not familiar with the technic should give it most carefully, and one might add, fearfully."

Tice states: "It is my present impression that tuberculin is of assistance in the treatment of tuberculosis, but unquestionably it is a most dangerous remedy and must be employed with the utmost care; even with the small doses now in vogue, considerable harm has been done by employing it indiscriminately and in too rapidly increasing amounts. It may be predicted that tuberculin will continue to be used by the competent few; but as a general remedy it will again fall into disuse."

That tuberculin when properly administered never causes an aggravation or extension of the disease is the conclusion of such men as Koch, Baldwin, Trudeau, Kingman and many other tuberculosis specialists.

The second common misuse of tuberculin is the expecting it to do the impossible. If when we begin the treatment of a case of pulmonary tuberculosis there is not enough healthy tissue to properly oxygenate the blood, if there is frequent loss of food as a result of severe paroxysms of coughing, if the pulse is weak and fast from overwork, if the temperature range is high, destroying tissues rapidly, if the cough is constant and resistant, if the will power has suffered and if to these you will add — as is often the case — insanitary surroundings, insufficient clothing, poor food and indifferent nursing, *have we the right to condemn* tuberculin if it does not always cure? Tuberculin will not make new lung tissue, nor will it renew the degenerated heart muscle, nor will it restore a crippled and impaired digestive system; but it will help some in every case and it will cure a large percentage of the cases if properly given.

The third misuse is the giving of a stale or inferior tuberculin.

Bonney⁸ states: "Make the dilution at the time of the injection, as the product becomes inert after remaining dilute for more than twenty-four hours."

I am thoroughly convinced that my best results have been obtained when I have used Koch's old tuberculin and made my dilution fresh each day; this method is preferable to using the serial dilutions as put up in this country — as with all products that are pushed by commercialism, tuberculin is shown by the manufacturers to be easy to give and certain in its results; their pertinacity in telling the medical profession how to give tuberculin and, in fact, how to treat most all diseases, should be given the rebuke that it deserves; their flooding the profession with literature on this subject will do more than any other one thing to bring tuberculin again into disrepute; they make it look easy, the general practitioner tries it, and if he does not succeed, he will be the one to condemn it.

7. Osler: Practice of Medicine, iii, 417.

8. Bonney: Diagnosis of Tuberculosis, p. 218.

The fourth misuse is to suddenly stop the tuberculin. We know that tuberculin is a powerful stimulant. We begin with a very small dose and at the end of, say, one or two years are giving many times more than we were in the beginning; to suddenly stop this stimulant is a very grave error; the dose should be gradually decreased for a time before it is withdrawn entirely. The sudden stopping of this stimulant will leave our patient more liable to a relapse or reinfection. We must withdraw it slowly and allow the system time to readjust itself the same as in the beginning of the treatment.

It has been suggested by some observers that the state authorities be given the power to determine who should be allowed to use it. This does not appeal to me; but I do believe that the state should institute a graded system for testing, beginning with the children. In this way the obscure as well as the incipient cases can be discovered at a time when repair and recovery are easy and certain. If it is good policy for the state to have the milch cows tested, and this has been proved, would it not seem good policy to have the children tested also?

I would go even further than this and require that all the children who give a positive reaction be treated with tuberculin. If this is done, tuberculosis will yield as completely as small-pox and yellow fever have yielded to preventive measures. I believe that the time has come when we should have legislation bearing directly on this matter. This legislation should give mandatory power to the state board of health or to a specially appointed commission. Something must be done. We have been covering and smothering this problem long enough. We must strike at its root, kill the disease in its infancy, and not wait until its seed time.

In referring to the misuse of tuberculin there is no desire on my part to discourage you, or to give you the impression that its use is beyond your sphere; but I do ask that you consider all the phases here presented carefully before you attempt it.

It is my impression that when a physician condemns tuberculin, he has either never used it, or he has not used it properly, or he has expected it to do the impossible, or he has used an inferior tuberculin.

32 North State Street.

DOUBLE UTERUS: REPORT OF CASE

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Young, single woman, aged 18 years, German, one of a pair of twins, the third birth in a family of eleven children. There was a younger pair of twins, one of whom died. The patient's twin sister is living and well, as are all her brothers and sisters, with the one exception above mentioned.

Menses began at the age of 14 years. Was of regular twenty-eight-day type of three days' duration. Very frequently patient was compelled to go to bed on second day, the pain was so great, and this pain must indeed have been considerable, as the patient was a hard-working, rugged

girl, and not cultivated to the disabilities of pain. Except for these painful monthly periods, her health has been good. As to height and proportion, the patient's physical development is about normal, but she possesses the mentality of a child aged 10 or 12 years. Her grimy skin and mouth of decayed teeth tell of ignorance as to the laws of hygiene.

Present Trouble.—On the day previous to her operation, the patient was taken with severe pain in abdomen at a little to the right of the median line. There was vomiting and weakness. She does not know as to temperature. After this attack she walked 7 miles.

Examination.—Abdomen was rounded and full, suggesting strongly a 7-months pregnancy. The muscles, however, were boardy. Particularly the right rectus. The vagina was filled with a fluctuating mass that extended intra-abdominally. A mass could be felt in right abdomen. Patient states that abdomen has been gradually increasing in size since menses began. Diagnosis in doubt.



Double uterus. The cavities filled with lead. The faint shadow at the left is the right ovary. The shadow at the bottom is the anterior wall of the dilated right cervical canal.

Operation.—On opening the abdomen, the right tube immediately presented itself. It was ten times its normal size and black. There were three twists between its uterine attachment and its fimbria. This, no doubt, was the cause of her acute attack — the strangulation of the tube by twisting. In the pelvis was a semisolid mass, rounded and smooth, the size of a fetal head. This bulged into the vagina and nearly filled that canal. The great inflammatory congestion and matting together of all the pelvic organs necessitated a panhysterectomy.

Pathology.—There was a double uterus. Both organs well formed as the picture shows you. The girl had menstruated from the left uterus.

She also had menstruated from the right, but the cervix to this one was occluded making a gradually increasing hematoma. This damming back on the right side caused a congestion in the right tube that markedly increased its size and predisposed to the twisting that finally brought the patient to operation. Patient made an uneventful recovery.

COLON BACILLUS INFECTIONS OF THE KIDNEY AND BLADDER *

IRVIN S. KOLL, M.D.

CHICAGO

Since the discovery of the colon bacillus by Escherich, in 1885, its ravages on the various tissues and organs have gradually become more accurately recognized. This fact has, in the past few years, led to very extensive investigation on this organism in its various pathogenic rôles.

The urologists more than any of the other specialists have awakened to the fact that the attack on the genito-urinary organs is one of the most frequent and most serious which they encounter. What follows is a brief consideration of the invasions of the colon bacillus into kidney and urinary bladder tissue.

Four routes have been assigned to the colon bacillus in its attack: ascending, hematogenous, lymphogenous, and by direct extension through the tissues.

As early as 1871, Olshausen advanced the theory of ascending infections from the bladder to the kidney. It was considered for many years as the most frequent route by which bacteria reach the kidney. To-day it is generally accepted by the more careful investigators that ascending infections from bladder to kidney are of less frequent origin than was formerly thought, and that in order to obtain such pathology one of two factors must exist, namely, obstruction of the urinary flow either intra- or extra-ureter. The writer in a series of experiments on rabbits, which will be reported in a subsequent communication, has found that even after slightly traumatizing the kidney pelvis, the introduction of virulent cultures of colon bacillus into the ureter produce little or no changes in the tissue of the pelvis, and cultures made from the urine after two to three days are sterile, but as soon as a non-absorbable piece of catgut is introduced into the lumen of the ureter, very pronounced changes occur in the kidney.

Ascending infections from the urethra into the bladder are very common in females, particularly infant females (Abt), due to neglect from soiled diapers, and in many cases even where the utmost care in cleanliness is undertaken. In adult women such bladder infections may be frequently caused by cleansing the anus in a forward direction following defecation. Postoperative catheterization as a factor in producing colon bacillus cystitis should ever be remembered as occurring very often.

* Read before the South Side Branch of the Chicago Medical Society, April 30, 1912.

Posner and Lewin, in 1894, were among the first to do conclusive work on the hematogenous origin of colon bacillus infections of the kidney. Their experiments were carried out on dogs. They closed off the anus and urethra simultaneously. In a very short time colon bacilli were found in the kidney and bladder, and isolated in pure culture from the blood. This work has subsequently been elaborated on by a number of observers. Following or concomitant with acute gastro-intestinal disturbances colon pyelitis cases have been often observed. This is noted in severe ptomain poisoning and associated with the various intestinal auto-intoxications. Pyelitis is also prone to occur with stubborn constipation.

The lymph tract as a carrier of colon bacilli is a new route added to the other two. Clinically, this has not as yet been proved, but a very interesting piece of research is just reported by Carl Francke, of Berlin. This observer traced the circulation of lymph from the large intestine along the ascending colon to the capsule of the right kidney into the lumbar glands; while the channels along the descending colon pass over the capsule of the left kidney without entering it and thence into the lumbar glands. With opium-constipated animals he found after four to five days colon bacilli in the mesentery lymph glands, though there was no complete retention of the intestinal content.

Quoting Noetzel, Francke states that the lymph glands are not true bacterial filters; for this reason bacteria are found more often in the blood stream than in the lymph channels. He summarizes by stating that in lieu of the direction of the lymph tracts right pyelitis is more common than left. Also that since it is generally accepted that the tubercle bacilli reach the kidney from the intestinal tract by the blood stream, may not the lymph flow carry the same organism to the kidney, and since renal tuberculosis is in the majority of instances descending in its spread, may not the colon infections of the bladder be secondary in most instances to the kidney?

That direct extension of the colon through the cellular tissue from bowel to bladder can occur is known. This etiology best explains a large percentage of cystitis cases in old prostatics before resort to the catheter is made.

Bacteriuria in relation to pyelitis and cystitis is a symptom which should be mentioned in passing, as it is always a danger sign. Albeck, in 392 urinalyses in pregnant women, found pathogenic organisms in thirty-three. In none were there any subjective symptoms whatever.

We are thus brought logically to the consideration of "pyelitis gravidarum," usually spoken of as the pyelitis of pregnancy, which term is a misnomer, and should be revised to "pyelitis *during* pregnancy." That the infection in so many instances occurs before conception has been often proved, and, as pointed out by Kolischer, in many cases where accurate histories of diseases during childhood is obtainable definite symptoms are described, pointing to pyelitis which quieted down to a bacteriuria until obstruction is produced by pressure of the gravid uterus on the ureter

Pyelitis gravidarum was first intelligently noted by Rayer, in 1841. In 1877, Chamberlain described a congestion of the mucous membrane of the urinary apparatus due to the pressure of the uterus and contents, this being the factor in producing the inflammation of the kidney pelvis. In 1889, Albarran and Rovsing published their very elaborate piece of work on urinary infections due to stagnation of the urine. The anatomic relation of the ureters entering the bladder wall, which, when pulled up by the enlarging cervix uteri, producing angulation, which, in turn, produces impaired urinary drainage, is the hypothesis set forth by Halban.

In Lenhartz's report on eighty cases of pyelitis, he found sixty-six to be due to a pure colon. Of the thirty-three cases of bacteriuria reported by Albeck, twenty-four were due to the colon bacillus. And so it is generally conceded that over 90 per cent. of the infections of the urinary tract are due to this organism.

Living in its natural habitat, the large intestine, this bacillus is surrounded by an alkaline medium, but in the urine a distinct acid reaction is present in all cases, except where a residual urine produces the alkaline phosphates. Why this change in chemical activity should occur has never been determined, and is a point now being experimented on by the writer. Artificially cultivated, the bacillus grows equally well on weakly alkaline and weakly acid media.

The pathology of colon bacillus infections of the kidney presents a varying picture, ranging from a very simple inflammatory condition of the pelvis to a true so-called pus kidney. The simple pyelitis type shows a very slight inflammatory change, consisting of a mononuclear or polynuclear infiltration, and rarely does one find even in the chronic type any increase in the connective tissue. The ureter may be involved, giving about the same picture as that found in the pelvis, but not very extensive. I am inclined to believe that a true pyelitis promptly looked after seldom, if ever, will produce an involvement of the parenchyma of the kidney, particularly as long as the infection remains of the pure colon type. The extension of the infection may, instead of going to the parenchyma, go through the cellular tissue out into the perirenal tissue, and here produce a varied type of changes, resulting in anything from a perirenal inflammation to abscess.

The cystitis cases may show very marked histologic changes, varying from a simple cellular infiltration to a marked connective tissue formation, with secondary contraction, giving the familiar picture of the not uncommon contracted bladder. The perivesical tissue very frequently becomes involved, and you get the different types of inflammation outside of the bladder so accurately described by Schmidt in a recent paper.

The prostate and seminal vesicles, together with the posterior urethra, may present the usual changes of an acute or chronic inflammation.

It is rare, but occasionally one finds a bacteriemia and septicemia resulting from colon infection.

The symptomatology may be acute, giving the typical septic temperature curve, with a sudden onset of pain located in the lumbar region.

rarely radiating down toward the bladder, nausea and vomiting, and the expected urinary findings. The acute symptoms are more frequently manifested in young children than in adults. The subacute type is more common than the acute, and patients will complain of a dull, aching sensation in the region of the kidney, with a possible rise in afternoon temperature, general feeling of malaise, with the associated phenomena, and occasionally the patient will come to you because he notices turbidity of his urine.

The chronic type resembles the subacute in some respects, but differs inasmuch as there are intervals where the patient has a complete cessation of subjective symptoms.

An accurate and conclusive diagnosis can only be made by means of the ureteral catheter and cultures. The condition must be diagnosed from a various number of other inflammatory conditions in the region of the kidney, but it is not within the scope of this paper to enter into these details.

Treatment.—There are still a number of medical and surgical men who do not commend the use of the ureteral catheter and cystoscope. I am sure that if they have any real foundation for a distrust of these very valuable instruments, it is based on their experiences with men not familiar with the technic of cystoscopy and ureteral catheterization. I am of the firm conviction that the cystoscope in the hands of careful men will never produce any serious results. The rational treatment, in my opinion, of pyelitis rests with the ureteral catheter. Whether or not the good results following this treatment are due to the simple introduction of the catheter, giving drainage to the ureter, or to the effect of the lavage, is a question still open for discussion. However, I cannot but believe that the washing out of the pelvis of the kidney is fraught with as many good results as the washing out of any cavity of the body that contains material that is injurious, if left *in situ*.

An all-important point in the treatment is the recognition of a cure. By that I mean patients should not be pronounced cured and dismissed from treatment until the case can be proved to be bacteriologically as well as clinically cured, for as long as a culture can be obtained from the ureteral catheter bringing the urine from the affected side, just so long will that patient be likely to have recurrences, and frequent recurrences of a pyelitis would almost surely produce pathology deeper in the kidney.

Having considered somewhat at length the characteristics of the colon bacillus in its natural habitat, the question arose whether or not, if by changing the chemical reaction in the neighborhood of its artificial residence, we could produce a more rapid destruction of the organism. Following this idea up with a long series of experiments, both bacteriologic and on animals, it was found that liquor aluminum acetate in a dilution of 2 per cent. was an active germicide and antiseptic to the colon bacillus. This drug, having now been employed by the writer and by a number of the members of the American Urological Association, in a total of sixty-some-odd cases, has given almost uniformly good results, so that at the present time I feel that it is not claiming too much to say

that liquor aluminum acetate is the most active drug that we have in combating colon bacillus infections of the kidney pelvis and the urinary bladder.

The treatment of cystitis cases is carried out as in other forms of cystitis, namely, bladder irrigations, which can be done with any mild antiseptic solution, this to be followed by the instillation of liquor aluminum acetate. These irrigations, in conjunction with the other adjuncts to the treatment of cystitis, such as suppositories and sitz baths, will also give more prompt and more ultimate good results than any other treatment previously used.

Here, again, let me reiterate the fact that your patient is not cured until a carefully catheterized specimen of urine from the bladder gives negative results following the making of cultures.

31 North State Street.

CERTAIN DISEASES OF THE BILIARY TRACTS AND THEIR SURGICAL TREATMENT *

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The most valuable legal documents for the student of law and the practicing attorney, as well as the most reliable guides for the judge on his bench, are the carefully reported cases of legal investigation and adjudication. I will follow this method in presenting the histories of a number of cases, of interest from the pathologic conditions and the results of treatment which was instituted, from a theoretical interpretation of the symptoms. These cases are all recent and have not been previously reported.

CASE 1.—Mr. A., aged 56 years, an attorney in very active practice, and a man of exemplary habits and regular life, was taken sick for the first time in his life in the autumn of 1910. His sickness began with headache, lassitude and a feeling of great depression. There was adequate cause for his condition in the sickness of two members of his family who were away from home with tuberculosis and an unusual stress of private and professional care. He was preparing an important brief of several thousand pages and conducting a vast number of different legal matters in local and distant courts. On the first examination which his physician made in November, 1910, he had a blood-pressure of 180, a slight amount of albumin and casts in the urine and he weighed 168 pounds. His treatment consisted in the regulation of his diet and the administration of saline laxative with small doses of potassium iodid. The latter was given with the hope of reducing the blood pressure. With this and similar treatment, he rapidly lost flesh and strength until April, 1911, when he weighed 142 pounds and was unable to do more than half a day's work. His blood-pressure had risen in the interval to 220-230 and there had been an increasing anemia to 75; 4,200,000 reds and 9,000 to 12,000 leukocytes.

At this time a small tumor was discovered in the left breast which it was thought might be carcinoma, and he came to me for a diagnosis and possible removal of the breast. In making my examination I found the conditions as reported above. Both morning and evening his blood-pressure was 230 and there was a large amount of albumin and casts in his urine. The tongue was coated

* Read before the Rock Island County Medical Society, Feb. 13, 1912.

and the eye dull and subicteric, but the cloudiness of the complexion did not suggest carcinoma. The chest was clear. The heart's apex was considerably moved toward the left and the area of cardiac dullness was increased. The heart sounds were free from murmurs, but they were rough and soft, as if there might be a myocarditis. The abdomen was very flaccid and easily examined. The liver was considerably enlarged, especially was there a tongue-like projection a little to the right of the median line and extending nearly as low as the umbilicus. The spleen, however, was not enlarged and there was no fluid in the peritoneal cavity. The region of the appendix was not tender. Both kidneys were indistinctly palpable and presented a normal area of dullness in the flank. There was no adenopathy and no deformity of the arch of the palate, the iris or suggestive defect or pigmentation of the skin of the body. Wassermann was negative.

Believing that the tumor was a benign adenoma but that the enlarged Riedel's lobe represented a pathologic focus, I suggested that the tumor of the breast be removed and the wound left open while frozen sections should be made for diagnosis, and that at the same time a small incision should expose the region of the gall-bladder and that it be drained. If the pathologic examination demonstrated a carcinoma, then the breast and axilla should be removed. A few days later and after repeated daily examinations in my office for more than a week, these procedures were carried out. The tumor of the breast was found to be a simple cyst adenoma and the wound was closed up and united at once. The gall-bladder was drained and found to contain a dark, brownish fluid of the consistency of the white of an egg. During the following three or four weeks no green bile appeared in the dressing and the patient's blood-pressure remained between 220 and 230. The albumin and casts remained about the same in the urine in spite of the fact that his diet was more restricted and he was kept permanently in bed. He went home and a few days later he found himself drenched with bile in the morning. The cystic duct had opened. During the succeeding three weeks his blood-pressure gradually fell to 160 and the casts and albumin entirely disappeared from the urine. They did not appear again and the blood-pressure did not rise again until September, when the gall-bladder closed. During these four months his appearance greatly improved. He took on 25 pounds weight and his hemoglobin index rose to 80, his red corpuscles to 4,500,000 and his white corpuscles fell to 7,000 and 8,000. Everybody remarked upon his ruddy complexion and his animated appearance. During all these months he did an elephant's work and completed his brief. He also buried one of his children and took the other one home convalescent.

In September the wound closed and during the succeeding four weeks his blood pressure gradually rose to 220, when I took him to the hospital and reestablished the fistula. During the following two weeks he was in the office every day and the blood-pressure went down at about the rate of 5 millimeters a day until it reached 165, where it remained. The casts and albumin which had reappeared in the urine now disappeared and he continues to keep the fistula open by the use of a metal drainage tube.

CASE 2.—Mr. S. is 23 years old and has been under the care of a specialist in heart disease for eight years. He is six feet and one inch tall and weighs 180 pounds. He has had all sorts of children's diseases, and his life has been despaired of many times on account of his congenital heart disease. It is a mitral stenosis with a perfect compensation. The Wassermann, which has been repeatedly tried, is negative.

About the first of August he began to suffer with abdominal pain and became mildly jaundiced. He had a great deal of stomach trouble of a rather indistinct sort and several examinations were made which indicated a mild hyperchlorhydria. He had a moderate anemia; reds 4,200,000, hemoglobin 75, with a considerable leukocytosis, 10,000 to 12,000. An examination of the abdomen disclosed a considerable enlargement of the liver with no corresponding enlargement of the spleen. This enlargement of the liver was recent and did not seem to be due to any change in the competency of the heart. It was attended by palpitation and tachycardia.

The palpitation was accompanied by a peculiar arrhythmia, which was far more distressing than all his other symptoms. During his early life he had not been troubled with arrhythmia and he had never before shown any clouding or icteric condition of his skin.

At the suggestion of his medical attendant, I removed his appendix, which he thought might possibly be the source of his pain, and drained the gall-bladder, believing that in this way we might relieve the evident cholemia which would account for the tachycardia and arrhythmia. The operation was performed in October and the patient remained in the hospital only a week, but at the end of that time the jaundice had disappeared and the arrhythmia was gone and the heart's action restored to its normal condition, which was regular, between 80 and 90. During the succeeding months he has remained well and his wound has been closed for four weeks.

CASE 3.—Mrs. C., aged 62 years, of New England extraction, has been an exceptionally healthy woman all her life. She is large sized, very intellectual and has the most perfect set of teeth in both jaws that I have ever seen in a woman of her age. She is the mother of several healthy children and has never had any sickness that could be considered typhoid, malaria or puerperal infection: in fact, she has never been sick in her life. She has always done a large share of her own housework, besides being active in church and public affairs. During the summer of 1911, she began to be short of breath and became so weak from arrhythmia, palpitation and dyspnea, that she was obliged to have her bed moved down stairs. She had many physicians who could find no cause for the weakness and loss of weight, except a rapid heart and a dusky complexion. At last in October she consulted Dr. Robert Babcock, who brought her into the city and put her in a hospital where he used every means to relieve the circulation and stimulate the heart. Her blood-pressure was 135 and she was anemic. I saw her in December and found an irregular enlargement of the liver with a distinct tumor pressing up against the flaccid abdominal wall in the region of the gall-bladder. The cardiac dulness was increased, the apex impulse was very faint, and there was an indistinct murmur extending over the heart and up toward the right shoulder. There was a distinct hyperesthesia over the Ewald's area. The conjunctiva and skin were subicteric but did not have the gray look which is so suggestive of carcinoma. After several days of observation, she was operated on early in January and the gall-bladder drained. The discharges from the gall-bladder were glairy and pussy, but the bile flowed more or less from the start. She, however, suffered the greatest prostration I have ever seen under such circumstances. In spite of the fact that the pulse became steady, slow and regular and the urine showed an increased amount of urea and the leukocytes diminished gradually from 22,000 where they had been during her whole stay in the hospital to 16,000 and 12,000 at the end of two weeks. However, on the removal of the tube, which seemed to irritate her, she became more animated about the end of the third week and rapidly picked up, began to read and desire company and to go about the hospital. Her blood-picture and urinary findings are now normal. [The wound closed early in April and she has remained well and active, apparently cured.]

CASE 4.—Mrs. L., aged 34 years, mother of several children, is a slight woman of 125 pounds. Two months ago she was taken suddenly sick with abdominal distress and vomiting. She had a doctor who considered it a case of gastritis and suggested some change in her diet. This event was the first of several similar attacks of abdominal pains, the last of which occurred a week before I examined her. At the examination the markedly jaundiced little woman showed the greatest weakness, hardly able to sit up and walk about the room. There was a very rapid pulse and a dry coated tongue with a temperature of only 100, a leukocytosis of 9,000 and a hemoglobin index of 80. The red cells were almost 5,000,000. The only abnormality to be discovered was an irregular, hard, nodular painful tumor in the region of the gall-bladder which had all the physical appearances of a carcinoma. I determined to operate, however, at once, and if an exploratory

incision showed it was a cancer, I would do nothing more than drain the gall-bladder if I found it distended.

The following day, under ether anesthesia, I made the exploratory incision, as if I were opening for a gall-bladder. The tumor was connected with the gastrocolic mesentery with the under surface of the liver and the side of the gall-bladder. It was hard and nodular and appeared to be carcinoma, but still it was too thickly covered with hypertrophied peritoneum to be of that nature. I made an incision through the abdominal wall a little to the right of the first one and put an artery forceps through it; and after aspirating a portion of the contents of the gall-bladder, which was greatly distended, thick and white, I pulled the collapsed gall-bladder through this second incision and held it there with the forceps, while I closed the first incision. After the first incision was closed I sewed the gall-bladder into the second wound in the ordinary way and introduced a drainage tube. The dressings were being put on when it was noticed that the tumor was disappearing and by careful palpation the grumous bile poured out of the drainage tube until the abdomen was flat. The patient has since that time rapidly improved and is practically well, though the fistula is still discharging bile.

These were all patients in whom the disease was confined entirely to the bile ducts. There was absolutely no disease of the liver. In the first case the cholemia, which was so mild as to give but the slightest jaundice, produced a high blood pressure, a nephritis and a loss of strength.

In the second case, a patient who had suffered with heart disease from birth but had a perfectly compensating heart, began to be troubled with palpitation and arrhythmia, accompanied by slight dullness and leukocytosis. The drainage of the gall bladder relieved him of these symptoms.

The third case was a woman of 62 who had never been sick in her life and was suddenly attacked with palpitation, enlargement of the heart and enlargement of the liver and she was completely relieved by draining the gall bladder.

The last case was that of a woman who had evidently harbored gall bladder disease for some years but now had a colic, during which large quantities of bile were forced out of the bile tract into the perieystic tissues and simulated a carcinoma.

We must always look upon the liver as a combination of two separate glands or two separate apparatuses. The first is the liver cell, which secretes a perfectly limpid bile. The second is the bile duct and its glands, which secrete a viscid substance added to the bile and extruded into the intestines. The biliary ducts are automatically divided into three quite distinct sorts. The first sort consists of the channels or conduits to which the liver cells are tributary. They arise between two adjoining liver cells and advance with gradually increasing epithelial walls until they are a tube studded with mucous glands and lined with cylindrical epithelium. The second sort of the biliary ducts or tracts consists of the gall bladder and the cystic duct and seems to be a reservoir adapted to the accumulation of bile between meals. It is studded with an epithelium similar to that of the functioning bile ducts but having very few mucous glands outside the cystic duct itself. The gall bladder is lined with cylindrical epithelium, but is devoid of mucous glands. The third portion of the biliary tract is the so-called *vasa aberrantia* which are really biliary ductules having no liver cells tributary to them. They are, how-

ever, supplied with mucous glands that greatly increase in number in advancing age.

The large number of gall bladders which I have opened in patients suffering with cardiac or other circulatory diseases, have been practically free of any bacteria that would grow on nutritive media, such as we use in the ordinary laboratory. I have, therefore, been obliged to look for other sources of the toxemia and am at present inclined to think that the toxins that produce these cardiac symptoms are the result of an abnormal or perverted secretion of the mucous glands of the biliary tract.

My reasons for this conclusion are the following:

1. All the gall bladders which I have examined, removing small portions from the fundus at the time of operation, *have been studded, even crowded with mucous glands.* These mucous glands have been so abundant and so active as to actually *penetrate* the muscularis and frequently show themselves just under the peritoneum as mucous cysts.

2. The epithelium of these mucous glands is highly active and excretes a material which seems to be *liquid cholesterin* although the little globules are crystallized, as shown by polarized light, and it has further been shown that in arteriosclerosis and myocarditis, the kidney and the heart tissues contain an increased and abnormal amount of cholesterin.

3. In Hanot's disease, or biliary cirrhosis of the liver, the uninfected bile ducts undergo a similar glandular hypertrophy.

4. All my efforts to find other causes for the recovery of patients symptomatically suffering from toxic myocarditis have been unavailing.

In a recent article in the *Lancet Clinic*, January, 1912, the symptomatology of the disease collated from more than thirty cases has been published.

A therapeutic measure may be instituted whenever the danger of its administration is less than the hope of its alleviation. Therefore, if a cholecystostomy is performed in such a manner as to be devoid of danger, it may be undertaken in cases where the ordinary operation is contra-indicated. I have, therefore, been led to simplify and expedite the procedure and have come to the following technical method:

The patient is brought into the operating room thoroughly prepared and the arrangements for the operation completed. The anesthetic, which is ether and oxygen, is now given by a skilled anesthetizer. This usually takes but two or three minutes. When the patient is completely relaxed an incision an inch and a half long is made at the border of the right rectus and an inch below the costal margin. Two assistants pull up the peritoneum and it is incised. The edge of the liver or the fundus of the gall bladder generally present themselves. If they do not, the finger is passed through the wound and the gall bladder palpated and caught with a smooth six-inch forcep, curved on the flat. The gall bladder is now pulled into the wound and attached to either side with a single catgut stitch. It is grasped above and below with artery forceps and if there is any tendency for the mesentery to come through the wound, or into it, a small strip of gauze is packed just below the gall bladder. The fundus of the gall bladder to which the forceps is attached, is now cut off and

the edge of the gall bladder on each side grasped with two other forceps. The finger is now passed into the gall bladder for exploration, sometimes with an 8-inch foreeps behind it. A tube is inserted and the tube fastened into the upper angle of the wound by means of a silk worm gut stich. This tube is as large as the little finger and about three inches long. It is cut off short and the drainage from the tube is caught in abundant dressings. The duration of the operation is from three to ten minutes, depending upon the skill of the assistants and the thickness of the abdomen. There is no haste or hustle but the greatest possible expedition, and it has been my effort to follow that ancient injunction of Hypocrites. "Above all things let the surgeon see to it that he does no harm."

REMARKS ON THE DIFFERENTIAL DIAGNOSIS OF SEROUS AND SEPTIC MENINGITIS*

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The differential diagnosis between serous meningitis and septic meningitis is occasionally accomplished with difficulty, and the differential diagnosis between localized purulent meningitis and diffuse meningitis is often impossible. The cause of this is that some of the symptoms of a purulent meningitis are caused by the necessary increase in the cerebro-spinal fluid as it occurs in pure serous meningitis, such as headache, stiff neck, choked disk, Kernig's sign. In cases of pure serous meningitis, such as Quinke in his first papers alluded to, and in which the symptoms were ascribed solely to the increase in the cerebro-spinal fluid, there may be little or no temperature, but in serous meningitis occurring in the course of an ear suppuration this factor of temperature may be added by the primary disease. For instance, in children and infants we occasionally observe the symptoms of meningitis together with fever which immediately disappear after spontaneous or surgical perforation of the tympanic membrane, or after a lumbar puncture. The fever in these cases is not due to the increase in the cerebro-spinal fluid, but to the inflammatory processes going on in the middle ear. In cases in which there are symptoms of meningitis accompanying thrombosis of the sigmoid sinus in adults, which disappear immediately on freeing the septic contents of the sinus, we have the usual septic temperature, but this temperature again is referable not to the processes going on within the dura, but to the distribution from the primary septic clot. Increase of the cerebro-spinal fluid can scarcely be regarded as an inflammatory phenomenon in the sense that we regard the changes taking place in the pia in septic meningitis. The tremendous difference in these clinical courses precludes any such view. The increase in the fluid must be regarded rather as a secretory phenomenon than as an exudate or transudate, and is caused in all probability by the action of toxic substances introduced from a

* Read at the meeting of the Chicago Laryngological and Otological Society, Feb. 20, 1912.

foreign inflammatory focus without the presence of living organisms. The difference between the clinical course exhibited by a serous meningitis, or certain forms of localized septic meningitis, and that presented by diffuse septic meningitis, to my mind is sufficient to differentiate them clearly one from another in a pathologic sense. We have all seen cases of meningitis occurring in the course of an acute otitis media, or an acute exacerbation of a chronic suppurative inflammation of the middle ear, which, despite lumbar puncture, meningeal drainage, through-and-through drainage, or whatever other surgical procedure is selected, are swept away in a few days to death, while in the case of serous meningitis, or a localized septic meningitis, as soon as lumbar puncture has been performed or incision of the dura immediately covering the inflamed area, recovery begins. The difference between these forms of meningitis, as regards their clinical course, is largely due to the portion of meninges involved. Serous meningitis kills from brain pressure. In internal serous meningitis or internal hydrocephalus, which continues for some length of time, we have pressure atrophy of the brain due to the pressure of accumulated fluid within the ventricles, or we may have death result from serous meningitis from pressure exerted by the fluid on the medulla oblongata against the foramen magnum, but death results in septic meningitis not from sepsis, but from destruction of the pia, and with it the cortex of the brain. The pia invests all portions of the surface of the brain, dipping down between the sulci and carrying with it blood vessels which penetrate its substance and supply it with nutrition. Accompanying these vessels are perilymphatic spaces, and when the pia is involved these vessels together with the peri-lymphatic spaces are also involved by the septic process, so that death results from an encephalitis rather than from a pure meningitis. It is conceivable that we may have an inflammation limited to either the subdural space or the subarachnoid space, and if this is so, it remains for the future to differentiate clinically between these two types. There are reasons for believing that such a differentiation may be made by that most trustworthy of differential diagnostic aids, lumbar puncture, and it is for the purpose of casting some light on this interesting field that I report the following cases:

CASE 1.—J. H., aged 47 years, police officer, was admitted to the Illinois Charitable Eye and Ear Infirmary Oct. 10, 1910, as an outdoor patient. He complained of headache, sleeplessness, and restless anxiety. For years there had been a discharge on the left side of the nose. Four weeks before admission to the infirmary swelling and pain and redness were noticed in both frontal regions, more marked on the right side. At the time he was first examined there was edema of the right eyelid, swelling and redness and tenderness over the frontal regions, and root of the nose. Rhinoscopy disclosed a purulent secretion coming down from the anterior portion of the middle meatus, polypi, and polypoid degeneration of the middle turbinated body. He was advised to remain in the hospital, but refused to do so. On the tenth and twelfth of October he was brought to the hospital by his son. Headache had increased, and he had periods resembling coma. Eyes and head deviated to the right; positive Kernig's sign; motor paresis of the left arm and leg; vertigo; could not close the left eye; temperature 100.2; pulse 92; respirations 30. A double Killian was performed. The right frontal process of the superior maxilla was necrotic and could be removed with the dressing forceps. The ethmoid labyrinth came away as sequestrum; the right sphenoid sinus was full of pus, its anterior wall softened. The partition between the two

frontal sinuses had already disappeared, but the right ethmoid cells were but very slightly affected. Lumbar puncture provided a fluid normal in color, consistency and tension. The patient's condition, far from improving after the operation, became worse. Rigidity of the neck became more pronounced; there was fibrillary twitching of muscles of the face; paralysis of the left arm and leg became more marked; coma continuous, so that on the fifteenth of October the inner wall of the right frontal sinus was removed. Clear cerebrospinal fluid escaped, and on probing beneath the dura no pus was discovered. Lumbar puncture a few hours before death disclosed perfectly clear cerebrospinal fluid, normal in color, consistency and tension. Patient died on the seventeenth.

Post-mortem of the head. The skull was exceedingly thin in the temporal region, especially on the right side. On incising the dura a quantity of pus escaped. The pia over the entire right hemisphere was infiltrated and thickened and lymphatic spaces outlined in pus with free pus between the sulci, especially in the fissure of Rolando, where macroscopic destruction on the surface of the brain and the cortex was discernible. The point of origin of the septic meningitis appeared to be an area of softening in the region of the right sphenoid cavity. Inoculations were made from the cerebrospinal fluid on gelatin, and serum glucose. After three days cultures were negative. Microscopic examination showed polymorphonuclear cells, mononuclear, and a few lymph cells. The percentage was not obtained.

CASE 2.—B. W., admitted to the Michael Reese Hospital, Oct. 10, 1910. Patient complained of severe headache, with great physical depression, which had existed for five or six days. The onset of the headache was rather sudden, and he had vomited several times. Patient thought he had fever from the beginning of his trouble, and felt very cold once or twice. He gave a history of no discharge from the ears.

Physical Examination.—General appearance is that of a fairly well nourished man, lying in bed with head retracted, legs and thighs flexed, groaning with pain, which is referred to the frontal region. During the few hours he has been in the hospital he has had projectile vomiting. Examination of the left ear by means of a pledget of cotton showed that there was secretion of slight amount, but very foul. Otoscopy disclosed adhesion between the malleus and promontory with a fistula in the postero-superior quadrant. No tenderness over the mastoid. Right pupil smaller than the left; both react to light and accommodation. No nystagmus. Caloric tests negative. Pupils were dilated with two per cent. homatropin solution; at the center of both corneal small opacities. Examination of the fundus shows that no neuritis is present. Both discs on temporal side show myopic chorioidal changes. Veins are fine but not tortuous. External strabismus of right eye; no herpes; tongue is dry and coated; breath foul; examination of the nose negative; marked rigidity of the neck and tenderness over the spine. Thorax negative. Abdomen thin, soft, no tenderness, retraction nor rigidity, no hepatic or splenic enlargement. Knees and thighs are flexed; Kernig's sign positive; knee jerks brisk; ankle clonus more marked on the left than on the right side. No Babinski; hyperesthesia of the skin over the extremities.

* He lay in a semi-comatose condition from which he could be aroused, when he would only moan and complain of intense headache. As he spoke little or no English, it was difficult to ascertain the condition of his speech centers, but the probabilities are that aside from the slow cerebration these were not affected.

On October 13 I performed a radical mastoid operation. The sigmoid sinus was exposed, and found healthy; the tegmen tympani et antri very much discolored and softened to the extent of a cubic centimeter. The bone was easily removed with dressing forceps, disclosing a discolored and thickened dura, with no normal brain pulsation. The dura was incised crucially; adhesion between the dura and the surface of the brain; no cerebrospinal fluid escaped. Exploratory puncture upwards into the brain substance for about one and a half centimeters the grooved director entered an abscess containing about four centimeters of foul smelling pus. A glass tube bent to fit the mastoid excavation was introduced

into the abscess cavity and the patient returned to the ward. The next day the patient's sensorium was clear; headache practically had disappeared, and he made a rapid and uneventful recovery. Patient's temperature at the time he was admitted was 102.6; pulse 80; respirations 29. Immediately before operation the temperature ran up to 103.2, pulse 72, respirations 28. After operation temperature was 99.6. From that time until it sank to normal, three days after the operation, it did not go above 100.4; pulse 76.

The cerebrospinal fluid, which was obtained on October 12, was opaque, resembling thin pea soup. Direct smear showed many pus cells, but no organisms. Differential count showed small mononuclears 3 per cent.; large mononuclears, 8 per cent.; and polymorphonuclears 89 per cent. Cultures from the cerebrospinal fluid remained sterile. Pns from the mastoid showed the staphylococcus and a Gram negative motile bacillus, probably the colon bacillus. Urinary examination negative.

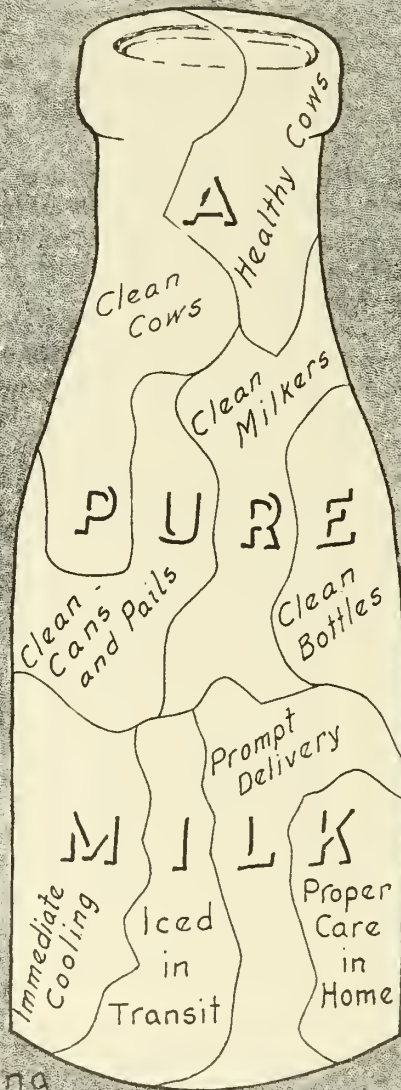
How are we to explain the peculiarities in these two specimens of cerebro-spinal fluid? In the one case we had an extensive septic meningitis, proved by post-mortem, with perfectly clear cerebro-spinal fluid, which was clear, under no tension, and, on microscopic examination, showed comparatively few cellular elements.

In the other case, the course of which precluded the existence of anything but a small localized area of meningeal inflammation, the cerebro-spinal fluid was opaque and rich in pus cells. It proves at once that the cytologic content of the cerebro-spinal fluid cannot be invariably depended on in differentiating between localized and general septic meningitis. The one fact that is of great importance is that in the second case bacteriologic cultures remain sterile. While we obtained also from the first case sterile cultures, I am inclined to place no reliance on these findings as the bacteriologic manipulations were not carried on by a sufficiently expert individual. In other words, I believe that the only differential point that we can obtain clinically between a septic meningitis that is at the moment spreading or has become general, on the one hand, and on the other, a localized meningitis that is effectually walled off, and serous forms of meningitis is the presence of living organisms in the cerebro-spinal fluid, and this I base on a considerable experience. We must remember in accounting for the presence of the enormous cellular content that these bodies have a tendency to sink down and accumulate at the bottom of the cerebro-spinal sac as they would in a test tube, so that a localized meningitis of small area, walled off from the general cerebro-spinal cavity, may produce at the bottom of the cerebro-spinal sac an accumulation of corpuscles, causing the fluid there to be opaque, while the fluid in the ventricle may be quite clear.

As to the cerebro-spinal fluid findings, it is exceedingly difficult to explain the absence of corpuscular elements in the cerebro-spinal fluid of the first case. However, in our spinal puncture we obtained the cerebro-spinal fluid from the subdural space, and I will venture to remind you that in the skull the subdural space is a potential space, while the subarachnoid space is a positive space; in the spinal canal the subdural space is a positive space, and the subarachnoid space is a potential space. A reasonable explanation as to the occurrence of clear cerebro-spinal fluid obtained by lumbar puncture in the first case was that the subarachnoid space was completely and effectually cut off from the subdural space.

THE PUZZLE SOLVED

EACH PART ESSENTIAL TO A PURE MILK



The breaking
of any part makes pasteurization necessary

Drake
1912

ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF THE ILLINOIS STATE MEDICAL SOCIETY

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JUNE, 1912

THE SPRINGFIELD MEETING OF 1912

The annual state society convocation has just closed as we write, and it was unusually successful in many ways. For the ninth time in sixty-two years the society returned to the place of its birth in 1850, and as has been so many times proven, the capital of the state offers many advantages for successful gatherings. We but voice the statement of many thoughtful members when we say that at least every other year the meeting should be held in Springfield. But one invitation for the next meeting was received, and when the president asked where the next meeting should be held a delegate on the front row of seats involuntarily answered Springfield. The state Dental society has for a long time arranged to have the meetings at the capital on the even years, going to other cities the odd years. Why would not this be a good plan for our society?

The village of 1850, hardly yet accustomed to the great honor obtained a few years before through the efforts of the long nine, among whom were Abraham Lincoln and Ninian Edwards, has now become a city of nearly 60,000. The old State House, in which the first meeting was held, constructed in the 40's and then supposed to be ample in size for all time to come, is now found to be too small for the business of Sangamon County, which contains within its border nearly as many people and certainly more wealth than the whole state did at the time it was

erected. The capital welcomed the society in a manner befitting its dignity, importance and size.

This was really the sixty-first annual meeting, for the sessions of 1861 and 1862 had to be abandoned because of the turmoil of the Civil War. The society then only counted about 100 members and a very large percentage of these were actively engaged examining other medical men for military positions, or recruits for service, or were seeing serious duty at the front. All these reminiscences of the past are brought up as we contemplate the fact that the society is really just starting on the seventh decade of its existence. This it began under auspicious circumstances of weather, attendance and scientific program. The weather was ideal. The places provided for the meetings were large, well ventilated, quiet and easy of access. The hotels, we believe, were able to give good accommodations despite the fact that three other organizations were in session here during the week. The entertainments provided proved satisfactory and were attended by large numbers.

A new departure in the opening exercises was the formation of a procession at the Leland Hotel, Tuesday afternoon at 2 o'clock. The members of the Sangamon County Medical Society to the number of forty acted as escort to the officers, visitors and guests, the total number in line being 100. On reaching the meeting place the usual invocation and welcoming addresses were given, which will be found in the minutes to be printed in the July JOURNAL. Before the close of this session at least 200 members had taken their seats, making the largest attendance we have ever known at an opening session. The secretaries' conference followed and was as usual interesting.

At 4 p. m. the credentials committee began its work and completed the roster in time for the meeting of the House of Delegates at 8 p. m. At this there were 109 members present. The first business was the settlement of the Adams County contention. Here we saw what appears to be an astonishing inconsistency on the part of two members of the Cook County delegation who were members of the credentials committee. As members of that committee they voted to seat Dr. Rice, but when the matter came before the house as members of the Chicago delegation they voted to unseat Dr. Rice. This was not the only back somersault taken by one of the gentlemen, but the other need not be mentioned here. The remainder of the session was taken up with the reading of a partial report of the council, and other routine business. A parliamentarian was introduced to assist the president in case any knotty points for ruling should be sprung. Fortunately the meeting closed about 11:15 without the occurrence of anything to mar the harmony of the occasion. We mention here with great regret the physical disability of President Newcomb. During the entire year the activities of Dr. Newcomb had been much curtailed by physical weakness, which became quite apparent when the annual session began. He was obliged to turn over the last hour of this session to Vice-President McDonald, a man of firmness and fine physical vigor. This leads us to query whether a certificate of good health should not be one of the requisites for the aspirant to the office

of president of the state society. So much has been demanded of this officer in the past few years that only the most vigorous can undertake it, with safety to himself or profit to the organization. This is proven by the fact that Councilor Pettit was obliged to resign at this meeting. During his term as president, Dr. Pettit used up a large amount of time and energy in society work, which has told so much on his physical vigor that he finds he is obliged to reserve his activity for the actual demands of his practice. Dr. Pettit's retirement after many valuable years of service to the state society is a source of great regret to those who know of his unselfish devotion to the best interests of the profession, and his excellent judgment at many critical periods during the past twenty years.

Dr. J. A. Marshall of Pontiac, a strong character and prominent in society work in the north central district for many years, succeeds Dr. Pettit.

Dr. M. L. Harris of Chicago also terminated his official connection with the society after having served as president one year and councilor for three terms. No man has been more active in society work from the county society to the national, and few have shown such a variety of conspicuous talents. We also mention here the retirement of Dr. H. C. Mitchell of Carbondale, as councilor of the ninth district. Dr. Mitchell has served five terms as councilor and one term as president, and has been a pillar of strength to the organization in his part of the state. He is succeeded by Dr. F. C. Sibley of Carmi, White County, who was nominated by Dr. J. L. Hamilton of Mount Vernon.

On account of the great amount of time and energy required, Dr. Carl E. Black had announced that he was not a candidate for reelection as councilor, but at the solicitation of practically the entire society was reelected for three years without opposition.

One other change in the office was made when Dr. Markley was elected to succeed Dr. Everett J. Brown of Decatur, who has for twelve years faithfully performed the duties of treasurer of the state society, and has watched the funds grow from a few hundred dollars to as many thousand. Dr. Brown's work has been done in that systematic and honest manner characteristic of the man, and we are sure that the members of the society have appreciated the services of Dr. Brown and will want to reward them in a proper manner in the near future.

THE NEW SECTION

The new section composed of eye, ear, nose and throat specialists was started in good style, with an attendance of 100. Interesting papers were read and it is certain that this section will continue as a valuable part of the organization.

COLLEGE REUNIONS

The Jefferson Alumni practicing in Illinois to the number of thirty were entertained by Dr. C. M. Bowcock at his residence on North Sixth Street, and a permanent organization was perfected. Professor R. C. Rosenberger represented the faculty of this honorable institution, and

was introduced to the scientific sections on Wednesday, at which time he took occasion to compliment the society on the program and the local committee on its arrangements for the meeting.

The alumni of the Northwestern met at lunch Wednesday noon at the Country Club. Seventy men were in attendance. The Rush men also met to dine at noon Thursday. While these meetings are pleasant occasions, it may be well for the society to consider some plan by which they can be held without conflicting with the scientific program or the legislative work.

CONTINUOUS SESSIONS

For the first time the plan of holding a session during the entire day was tried, and while it was successful it might hardly be called a success. There was no break in the reading of papers. For one-half hour only twenty-five persons were present, but the members rapidly returned and by 1 o'clock 100 were in attendance, and one-half hour later 200 were present. The continuous session was our suggestion, but we must acknowledge that the society is hardly ready for the experiment. The scientific program was full of good papers, and the readers were greeted with a large number of appreciative listeners.

DISTINGUISHED VISITORS

Professor Rosenberg of Philadelphia has been mentioned. Dr. L. W. Littig of Davenport, who had just retired from the office of president of the Iowa State Medical Society, and Dr. D. S. Fairchild of Clinton, an ex-president of the same society, were also present, and were welcomed.

Dr. S. A. Knopf, the distinguished specialist on tuberculosis of New York, was also present and delivered an excellent address, and held an instructive clinic.

Dr. Dudley P. Allen of Cleveland, Ohio, delivered an excellent address on "The Essential Factors in the Development of Surgery."

THE WEDNESDAY EVENING ENTERTAINMENT

Wednesday evening was given to a vaudeville at the Majestic Theatre. An audience which filled the spacious theatre witnessed an amusing performance, during which Max Bloom tried in vain to get Secretary Weis on the stage. It was said he intended to question him on the origin and intent of the full set of "alfalfa," which Weis brought back from Florida. After the performance the entire audience adjourned to the Leland, where a reception was tendered President Newcomb and wife in the sun parlors. A buffet luncheon and dance program filled up the time until midnight. The entertainment was pronounced a success in every particular and was thoroughly enjoyed by all present.

The proceedings of the last day will be considered in the next issue of the JOURNAL.

THE NEW OFFICERS

President-elect, C. J. Whalen.....	Chicago
President, L. H. A. Nickerson.....	Quincy
First Vice-President, S. E. Munson.....	Springfield
Second Vice-President, W. H. Curtis.....	Wilmington
Secretary, E. W. Weis.....	Ottawa
Treasurer, A. J. Markley.....	Belvidere
Councilor Dist. No. 2, J. A. Marshall.....	Pontiac
Councilor Dist. No. 3, C. D. Pence.....	Chicago
Councilor Dist. No. 9, Frank C. Sibley.....	Carmi

DELEGATES TO THE AMERICAN MEDICAL ASSOCIATION

The hold-overs are:

Hugh T. Patrick.....	Chicago
Everett J. Brown.....	Decatur

Elected for one year to fill out the unexpired term of Dr. A. H. Ferguson, deceased:

George S. Rainey.....	Salem
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Those elected for two years are:

A. L. Brittin.....	Athens
A. C. Cotton.....	Chicago
W. L. Noble.....	Chicago
J. A. Robison.....	Chicago
J. T. Montgomery.....	Charleston
E. W. Fiegenbaum.....	Edwardsville

ALTERNATES

S. C. Stremmel.....	Macomb
C. U. Collins.....	Peoria
G. L. Armstrong.....	Taylorville
A. B. Middleton.....	Pontiac
E. Baur.....	Chicago
K. A. Zurawski.....	Chicago
R. A. Hanna.....	Peoria
R. J. Coultas.....	Mattoon
H. A. Millard.....	Minonk

COMMITTEE ON PUBLIC POLICY

A. M. Harvey, Chairman.....	Chicago
Charles H. Parkes.....	Chicago
Frank P. Norbury.....	Springfield

COMMITTEE ON MEDICAL LEGISLATION

L. C. Taylor, Chairman.....	Springfield
M. S. Marcy.....	Peoria
J. V. Fowler.....	Chicago

COMMITTEE ON MEDICAL EDUCATION

A. M. Corwin.....Chicago

SECTION OFFICERS

Section One

Frank P. Norbury, Chairman.....Springfield

F. S. Churchill, Secretary.....Chicago

Section Two

Stephen C. Glidden, Chairman.....Danville

H. M. Richter, Secretary.....Chicago

Section Eye, Ear, Nose and Throat

Willis O. Nance, Chairman.....Chicago

George F. Suker, Secretary.....Chicago

SECRETARY'S CONFERENCE

E. W. Oliver, President.....Peoria

E. B. Owens, Vice-President.....Dixon

Jennie Lyons, Secretary.....Champaign

REMARKS OF DR. L. H. A. NICKERSON ON ASSUMING THE
PRESIDENTIAL CHAIR AT SPRINGFIELD, MAY 23, 1912*Mr. President and Members of the Illinois State Medical Society:*

I was born without the "lucky caul," and have had a strenuous time ever since. I was elected as your president-elect in a hurricane with the waves running high. In the course of time, I have become your president, with the sea still in a turmoil. I hope with the free use of oil to see the waves calmed, and the ship of your president anchored in a still harbor, with all her bills of lading intact. Like many of my predecessors, I want to devote considerable of my term of office to organization. I have set the mark for membership of this state society at the modest figure of 85 per cent. of the legally registered physicians, which the secretary of the board of health informs me is 10,000. From these we should have in our organization on May, 1913, at least 8,500; then we will lead in membership all other state societies. New York has at the present time 6,885; Illinois ranking next with a membership of 5,600; to equal New York, we will have to gain 1,285 new members. The number of members in the A. M. A. is not so great in either state, New York having 3,420, while Illinois has 3,198. With a little effort, this difference of 222 can be readily obtained. This cannot be done without the active cooperation of each and every one of you. Can we have your active support? When you go home, get in touch with your secretary, look over your roster, and compare it with the members of registered physicians in your county. Don't be satisfied until your local society has on its rolls at least 85 per cent. of the total number of registered physicians in your county.

I would suggest that the council be requested to send the JOURNAL to every physician in the state during the current year, so when a physician is approached for membership he will know partly what he will derive in return by joining the regular organized profession.

If the council can see their way clear, I would request and advocate putting an organizer in each councilor district, and one in each of the branch societies of Cook County. I believe enough good men at a nominal salary could be obtained for this work from the fourth year classes of the medical colleges of Chicago, for the months of June, July, August and September. We are under obligations to the American Medical Association to lead all other states in membership. In our state, we have the great publishing house of the American Medical Association, from which house are published the *American Medical Association Journal*, several state journals, and many pamphlets. This building, with its machinery and fixtures, costing the modest sum of \$288,883.66, with an outlay the past year for salaries, labor, stationery and postage, \$261,243.14. With this large amount of money paid out in Chicago, the Cook County Medical Society is doubly under obligations to raise its present membership of 2,305 to 85 per cent. of 4,300 registered physicians in Cook County, bringing her membership up to 3,656.

I plead especially with the local secretaries to get actively into this missionary work; let each and every member of the state society put his or her shoulder to the wheel, so when we return at our next annual meeting our cry will be "85 per cent. is an accomplished fact." As to my personal efforts, I want to devote a considerable part of my term in each councilor district to the interest of organization and scientific work. I thank you for this honor.

MEDICINES AND THE PATENT LAW

Having pointed out that, by decree of court, the one-time proprietary name "Lanolin" had been declared to be a general name for wool-fat (*Jour. A. M. A.*, Sept. 9, 1911, p. 906), the Council on Pharmacy and Chemistry now shows (*Jour. A. M. A.*, April 27, 1912, p. 1298) that the terms phenacetin, sulphonal and trional are similarly to be regarded as common non-proprietary names. Physicians generally have allowed themselves to be led to believe that these names are still proprietary and applicable to one firm's product. In view of this opinion druggists are bound to dispense the original brands which are more expensive but no better than the drugs sold under the pharmacopeial titles. Hence it is time that physicians become acquainted with the provisions of our patent and trademark regulations and the report of the Council is timely.

It is to be hoped that the next pharmacopeia will include the terms phenacetin, sulphonal and trional as synonyms if not as titles for the drugs now official as acetphenetidin, sulphonmethane and sulphonethylmethane.

THE FLEXNER REPORT

The Flexner report of the Carnegie Foundation has made medicine in this country realize that her first great problem is to set her house in order, and that the medical school in this country must treat medicine as a science and be prepared in its equipment and personnel to meet all the obligations of this science.—*Journal of the Medical Society of New Jersey*, May, 1912.

THE FAITH HEALER IN SWITZERLAND

A recent cablegram from Berne states that one Herman Rutschi had been convicted as a charlatan and fined and imprisoned for pretending to cure diseases, as a faith healer. In the past six months five others of this cult have received similar judgment in the Swiss courts. It is evident that the Mountain Republic has taken up this matter of faith healing in a serious manner, and will put an end to this nonsense.

Correspondence

OBJECTS TO ADVERTISING MALT EXTRACTS

GILLESPIE, ILL., May 4, 1912.

To the Editor:—I see the last two issues of our valuable JOURNAL is carrying a full-page ad. of Pabst Extract. It is very disgusting to me to have to help support a paper that has a brewery ad. in it, and it is only under protest that I do it. This is an outlawed advertisement by *The Journal of the American Medical Association*, and I think you should cease to carry such advertising, not only this but all such that are put out for no other purpose than to create an appetite for liquor. Please won't you leave such out? I hate to sever my connection with the State Society, but I am terribly in earnest and will have to do it if this is continued.

Respectfully.

DR. J. N. ENGLISH.

ARMY MEDICAL CORPS EXAMINATIONS

The Surgeon General of the Army announces that preliminary examinations for the appointment of first lieutenants in the Army Medical Corps will be held July 15, and Sept. 3, 1912, at points to be hereafter designated.

Full information concerning these examinations can be procured on application to the "Surgeon General, U. S. Army, Washington, D. C." The essential requirements to securing an invitation are that the applicant shall be a citizen of the United States, shall be between 22 and 30 years of age, a graduate of a medical school legally authorized to confer the degree of doctor of medicine, shall be of good moral character and habits, and shall have had at least one year's hospital training, after graduation. The examinations will be held concurrently throughout the

country at points where boards can be convened. Due consideration will be given to localities from which applications are received, in order to lessen the traveling expenses of applicants as much as possible.

The examination in subjects of general education (mathematics, geography, history, general literature, and Latin) may be omitted in the case of applicants holding diplomas from reputable literary or scientific colleges, normal schools or high schools, or graduates of medical schools which require an entrance examination satisfactory to the faculty of the Army Medical School.

In order to perfect all necessary arrangements for the examination, applications must be complete and in possession of the Adjutant General at least three weeks before the date of examination. Early attention is therefore enjoined on all intending applicants. There are at present sixty-eight vacancies in the Medical Corps of the Army.

A TALK ON OFFICIAL PREPARATIONS

It should appear by this time to most members of the medical profession that the drugs and preparations of the U. S. P. (United States Pharmacopeia) and of the N. F. (National Formulary) are practically sufficient to systematically and scientifically treat every known form of curable disease. Since the inception of our first U. S. Pharmacopeia, in 1820, our foremost investigators, physicians, pharmacists, scientists, clinicians, chemists and laboratory workers have labored to produce the best possible armamentarium for the use of the practicing physician.

Without it being necessary to belittle other drug products, whether secret or not; without the necessity of belittling systems of healing other than by means of drugs, we do not believe that physicians would prescribe specialties or nostrums if they knew of the all-sufficient wealth of materia medica products to be found in our official and legal standards, the U. S. P. and the N. F. These official products will meet practically every pharmacologic and physiologic condition that human flesh is heir to.

The physician well knows that each case, each patient, presents certain individual features or symptoms, and these are of the greatest importance. It is rational to suppose therefore that when such symptom or symptoms are recognized, the physician will prescribe the proper pharmacologic antidote, that is, a remedy whose pharmacologic action exactly meets the diseased condition present and overpowers it, thus effecting relief or a cure.

This we would call rational therapeutics. The physician must know that the proper pharmacologic remedy is a standard one. Almost every pharmacologic remedy is an official drug or preparation. These latter are therefore worthy of the closest study and most careful attention.

Consequently the physician should refuse to prescribe a drug that is not needed; he should refuse to prescribe a drug that will not effect his purpose; he should refuse to prescribe the wrong dose, either too little or too much, and he should refuse to prescribe a drug that may harm instead of help.

A physician who objects to these things, and who has his individual practice and the welfare of his patients at heart, will not fall a prey to the "detail man" who comes into his office and delivers his message of "delusive hopes." A physician who understands the use of "tried and true" standard official medicines has a "tried and trusty" sword, while he who depends on the nostrums, whose composition is a mystery, has nothing but a painted stick.

No physician should deem it reputable or scientific or just to his patients to prescribe a preparation the ingredients of which he is not therapeutically familiar with. It is considered little less than malpractice. The patient pays for an opinion, for scientific advice, and if a nostrum is prescribed it is akin to fraud, for the patient can prescribe his own nostrums (and thousands are doing it every day to their own harm).

We repeat therefore that the physician, with the aid of the Pharmacopeia and National Formulary, and a capable pharmacist as assistant, hardly needs a secret specialty or proprietary mixture in the medicinal treatment of disease.

TWO OFFICIAL PREPARATIONS

We would call especial attention at this time to the following two excellent official preparations as being among the best of their kind in the pharmacologic conditions indicated:

GUAIACOLIS CARBONAS, U. S. P.—Guaiaicol carbonate is a guaiaicol derivative obtained by the action of carboxyl chlorid on sodium-guaiaicolate. It is a white crystalline powder, almost tasteless and odorless.

The average dose is 1 gm. (15 grains), given preferably in powder, cachet or capsule form. Smaller doses at first may often be prescribed with advantage and then gradually increased to a maximum of 90 grains per day. It is well borne by the stomach, not irritating the gastric mucous membrane nor disturbing the digestion.

It is rapidly absorbed and eliminated, its excretion occurring by the kidneys and the bronchial mucous membrane which it stimulates, and thus it has proved a good expectorant. In small doses it appears to have a selective sedative influence on the terminal nerve-filaments in the gastric mucous membrane.

In pulmonary tuberculosis, when long continued, it has probably proved more efficient than any other remedy, it being generally supposed by advocates of this method of treatment that the remedy destroys the tubercle bacillus in the lungs through its antiseptic properties.

It is thoroughly recommended in acute pulmonary inflammations by many clinicians. Some authorities claim for it curative powers in typhoid fever, it being decomposed into guaiaicol in the intestine.

ELIXIR AMMONII VALERIANATIS, N. F.—This elegant and palatable elixir contains in each average dose (4 c.c., or 1 fluidram), 2 grains of ammonium valerianate in aromatic elixir. A small quantity of chloroform is also present, besides tincture of vanilla, and the compound tincture of cudbear for coloring it.



CAT.

L. H. A. NICKERSON, M.D.

PRESIDENT ILLINOIS STATE MEDICAL SOCIETY 1912-1913

Ammonium valerianate is sedative to reflex excitability and antagonizes the action of such drugs as strychnin. In full doses it increases the action of the heart and raises the temperature, a full dose being generally considered to be 10 grains of the salt.

When given in such doses, it is an efficient antispasmodic, of remarkable influence in all forms of hysteria.

The pharmacologic action of this drug and others of similar character gives no clue to its clinical use, but clinical experience has established its true value, scientific medicine as yet not having established rational therapeutics in this class of remedies. It is this condition that breeds the greater number of "specialties," "quacks" and "nostrums."

There is just enough of the element of uncertainty about them to make this possible, but the intelligent practitioner will realize that the ignorant and unscientific man cannot solve mysteries which are baffling the most careful and painstaking investigators, in this case as well as in all others.

COUNTY AND DISTRICT SOCIETIES

BRAINARD DISTRICT MEDICAL ASSOCIATION

The Brainard District Medical Association, at a meeting held in Lincoln April 29, 1912, elected the following officers: president, Dr. L. M. Perry, Broadwell; first vice-president, Dr. C. W. Carter, Clinton; second vice-president, Dr. C. B. Caldwell, Lincoln; third vice-president, Dr. E. B. Kirby, Mackinaw; secretary, Dr. H. S. Oyler, Lincoln; treasurer, Dr. C. C. Reed, Lincoln; members board of censors, Dr. W. H. Kirby of Chestnut, Dr. J. H. Butler of Hartsburg and Dr. A. L. Brittin of Athens.

CENTRAL ILLINOIS DISTRICT MEDICAL SOCIETY

The thirty-eighth annual meeting of the Central Illinois District Medical Society was held in Pana, Tuesday, April 30, 1912, in the G. A. R. hall. The following program was rendered: "Diagnosis of Intestinal Obstruction," Dr. Don W. Deal, Springfield. Discussion opened by Dr. Buckmaster, Effingham. "Therapeutic Literature," Dr. E. J. Brown, Decatur. "Some Changes That Have Occurred in the Practice of Medicine in the Past Forty-Five Years," Dr. T. J. Whitten, Nokomis. "The Significance of Pain as an Aid to Diagnosis," Dr. W. C. Wood, Decatur. Discussion opened by Dr. G. N. Kreider, Springfield.

COOK COUNTY

CHICAGO MEDICAL SOCIETY

Regular Meeting, March 27, 1912

A regular meeting of the Chicago Medical Society was held March 27, 1912, with Dr. M. L. Harris in the chair. Dr. Albert Goldspohn gave a "Demonstration of Interesting Cases." Dr. Cassius C. Rogers read a paper on "Surgical Treatment of Intracranial Pressure."

REPORT AND DEMONSTRATION OF INTERESTING CASES

A. GOLDSPOHN, M.D., CHICAGO

CASE I.—A MAN FROM WHOM THE ASCENDING AND PART OF THE TRANSVERSE COLON HAS BEEN REMOVED, AFTER AN ILEO-COLOSTOMY, FOLLOWING AN OPERATION FOR SEVERE TYPHLITIS AND APPENDICITIS.

W. H. K., aged 32 years, a minister, of a healthy family, had been ailing very much from stomach disorder, constipation and pain in the right side of the abdomen for a number of years. He was treated under various diagnoses and at one time declined an operation for appendicitis. His stomach disorder was so prominent that an ulcer of the stomach or duodenum was probable, but examination of the stomach fluid and of a test meal did not increase the probability, while the local signs in the right lower quadrant of the abdomen left no doubt of appendicitis. It was planned to remove the appendix and then pass a hand up to palpate the pylorus, gall-bladder and duodenum and, if necessary, make also an epigastric incision. On Jan. 12, 1909, the appendix was found friable from inflammatory infiltration and it was so buried in the exudate and adhesions that it could not be removed without rupture and spilling of some of its dangerous contents in the wound. Likewise the walls of the cecum from the ileo-cecal valve down were thickened and friable from inflammatory infiltration and its bottom presented a mass nearly 2 cm. thick and so hard and nodular as to resemble malignant disease. This clearly must be removed. Microscopic examination later

found nothing malignant. As the patient's condition forbade making an ileo-colostomy and resection of the cecum with the valve, the cecum was cut off below the valve, although its wall at that point in half of its circumference was too much infiltrated for suturing with a good prospect of success. It was then closed by sutures that inverted its edges, placed in successive layers, as the purse-string suture seemed too likely to cut through or to cut out. Complete union did not result, no doubt, owing to the condition of the bowel wall and the generally infected nature of the wound. After ten days, fecal discharge came from the track of the gauze drain, that had been placed in contact with the sutures in the bottom of the wound, and in a few days, the entire fecal current came that way. This continued so for over two and a half months. As by April 15, 1909, only occasionally some small amount of fecal matter had been voided by the rectum, as there was no prospect of improvement in that respect, and as the patient's general condition had been improved, a second operation was done. The ileum was taken off at a point some 4 inches away from the diseased cecum, and the transverse colon bisected about 6 inches beyond the hepatic flexure. The distal opening of the former and the proximal opening of the latter were closed. An end to end ileo-colostomy was then made with a Murphy button, after the excessive lumen of the larger bowel had been reduced by suturing with knots inside. A gauze drain was placed down to the bowel and (mistakenly) in direct contact with the suture line. In consequence a leaking of gas and enema fluid occurred for a couple of weeks but no perceptible fecal matter.

The rectum resumed its function quite normally from the date of this second operation; and the patient left the hospital on the following May 31, 1909. The cecal wound continued to discharge merely the secretions of the excluded bowel. A trial was made with a stiff form of Peck's paste injected to fill and form a cast in this bowel to see whether it would tend to obliterate its mucous membrane and its lumen, while the patient was recuperating at home until the following Aug. 30, 1909 (3 months), but the paste merely added to the discharge. In a third operation the excluded colon was excised without much difficulty as the infiltration had largely sub-sided. When distended with water it measured about 18 inches in length and held only 1 pint of water, having become atrophic and even lost its haustra from non-use. The patient's recovery from this operation was smooth and primary union perfect, aside from a gauze drainage tract. He soon was delighted at the manner in which his bowels moved. His gain in weight and health and spirits has been very satisfactory since then.

CASE 2.—A YOUNG MAN FROM WHOM A SECTION OF THE ASCENDING COLON WAS REMOVED ABOUT ONE AND A HALF YEARS AGO, FOR CARCINOMA, CAUSING AN EXTREME STRICTURE OF THE BOWEL AND GREAT EMACIATION.

W. H. C. A printer, 28 years old, without hereditary taint, about 10 months before operation began to have abdominal pain most severe about 3 hours after meals, and constipation, both symptoms growing constantly in severity. The pain became so severe that he took a quarter of a grain of morphin four and five times in 24 hours. His normal weight usually was 145 to 150 pounds. In eight months this was reduced to 110 pounds. Enormous doses of castor oil secured only slight passages. At this time, Sept. 10, 1910, his appendix was removed elsewhere, without improving his condition, which continued to grow worse until he looked like a cadaver and weighed only 83 pounds when he came into the hands of Dr. H. S. Barnard with whom I performed the following operation upon him on Nov. 10, 1910. After the accumulated feces had been cleared away as much as possible by salines and colon flushings; first a small median incision was made to determine the location of the obstruction. Finding this in the upper part of the ascending colon, the exploratory incision was closed, and a long one made outside of the right border of the rectus muscle. There were no enlarged glands to be found but a hard tumor mass about the size of a small orange engaged the entire circumference of the bowel, but was fairly movable upon its base. It was difficult of access, however, until the peritoneum was cut which held the bowel on its outer side, back against the posterior and lateral

abdominal wall. The ascending colon could then be raised and rolled into the incision. After emptying the proximal gut as much as possible of its contents by compression and constricting both it and the distal portion with a rope of gauze, a section of about 12 cm. in length, being about 3 to 4 cm. beyond the tumor on each side, was cut out. An end to end circular enterorrhaphy was then made with three rows of sutures, the first of continuous catgut took in the entire thickness of the bowel wall, turned its edges inward and had all its knots on the inside of the bowel lumen.

The second row of celluloid linen was also continuous and aimed to take all coats except the mucosa, while the third engaged the peritoneum only as far as it was present, and connective tissue where it was absent. A gauze drain was placed in direct contact—unfortunately—with the circular union. This had no doubt much to do with the extent of leakage that followed. It would have been better to stitch a layer of omentum around it and place the drain down upon that, especially posteriorly where the peritoneum was absent for 3 to 4 cm.; for in 6 days after operation, fecal discharge appeared on the dressings and continued in considerable amount for several weeks. It then subsided but a sinus remained for several months, that closed after two injections of Beck's paste.

For about two weeks after this radical operation the patient's digestive organs continued to be so disturbed that he could retain scarcely anything, so that it appeared doubtful whether he could be kept alive. Before this operation his weight was 83 pounds and when he left the hospital it was 78 pounds. But he gained in strength very rapidly after that and reached his former normal weight in about 6 months.

He is now very well and there is no evidence of any recurrence of the growth so far. Microscopic examination, confirmed by Prof. Zeit, revealed an adenocarcinoma. The specimen seems, unfortunately, to have been lost.

CASE 3.—A YOUNG LADY, A YEAR AFTER RECOVERY FROM A SUBPHRENIC ABSCESS OF PNEUMOCOCCIC ORIGIN, DRAINED THROUGH THE DIAPHRAGM AND THE PLEURAL SPACE.

Miss F. V., Italian, aged 18 years; a seamstress without hereditary taint, who had never had any severe illness and was healthy until two years previous to this attack. During these two years, she suffered from lack of appetite, lassitude, headaches, and had sores limited to the face, most of the time. Her serious sickness began suddenly with chills, fever and pain in the right side above the waist line. After having been in bed at home for ten days she came into the medical care of Dr. B. M. Linnell in the Evangelical Deaconess Hospital, who observed her carefully for two weeks. During this time she had constant pain in the region of the liver, aggravated by all movements of the diaphragm, a temperature of sepsis varying from 101 to 105 degrees and a pulse ranging from 110 to 140. There were no abdominal symptoms and the only local signs were some increase of the area of the liver dulness and diffuse tenderness chiefly below the right costal border. No bulging of intercostal spaces. No signs of infiltration of any part of the lung nor pleuritic exudates. Two exploratory punctures were dry. The blood-count showed reds 4,420,000 and white cells 12,840. Hemoglobin 80 per cent. The urine presented nothing significant. After this she was examined by Dr. H. W. Ableman who made the diagnosis of subphrenic abscess. Thereupon she came into my hands. July 24, 1910, after locating the abscess on the operating table, by several punctures of different depths, I resected about 4 cm. of the eighth rib, about 7 cm. away from the costal border and opened into the lower tapering edge of the pleural cavity which there appeared to be obliterated by agglutination of its walls. With a finger and expanding forceps I readily passed through the diaphragm and struck pus in numerous small abscesses in the liver, with intervening trabeculae. These were broken down with a finger. As the cavity extended some distance laterally from the opening in the eighth rib, I passed a long curved forceps into the bottom of the cavity in the liver, then through the diaphragm again into the outer tapering part of the pleural cavity and bore with its end against the soft parts of the tenth intercostal space. This

could then be safely incised and a good-sized drainage tube drawn clear through. After the cavity in the liver and the tube had been well washed out, the former was packed with iodoform gauze. Her temperature continued to rise to about 103 in the evening for several days, but after a week it rarely rose above 101 and soon became normal.

The purulent fluid drained out was large. Dressings for a time required changing twice a day. After the tube had been in for several weeks, a free discharge of bile occurred. On removal of the tube and use of Beck's paste, this soon ceased; but severe nausea followed for some days. She left the hospital on Sept. 15, 1910, with a sinus that was practically closed. She has had very satisfactory recovery of weight and strength.

Her health is now very good and she has been active at her occupation since about two months after leaving the hospital.

2120 Cleveland Avenue.

DISCUSSION ON THE PAPER OF DR. GOLDSPOHN

Dr. D. N. Eisendrath: These cases show the difficulties surgeons meet with in operations on the large bowel. He has had the experience which so many of us have when we try to exclude the large bowel. There is a continual secretion of mucus and nothing will check it so long as there is mucous membrane in the excluded bowel. The only thing to do is to extirpate as he did.

The surgery of the large bowel differs from the surgery of the small bowel in this respect. An end to end anastomosis can be made easily in the small bowel whereas in the large bowel it is much easier to make a lateral anastomosis, even of the ileum with the transverse colon. In that case we are very much less likely to have leaks than in the case of an end to end anastomosis. He had leakage in both his cases. Another point is that drains pressing on the large bowel are very apt to cause fecal fistulas. That is the experience I have had and so much so that in every case of appendicitis where it is necessary to drain, as in retrocecal appendix, I use the softest possible drain, and even then we are apt to get a fecal fistula from pressure.

In the second case I had my doubts as to the pathologic diagnosis until Dr. Goldspohn mentioned that it had been confirmed microscopically by Dr. Zeit. There are so many cases in young people of strictures of the cecum and ascending colon which resemble macroscopically a carcinoma but are shown to be a hyperplastic form of tuberculosis. It may resemble carcinoma in every respect clinically but not microscopically.

In the third case, the experience that surgeons have is about the same as Dr. Goldspohn's, with this exception, that, if possible, we try not to drain a subphrenic abscess through the pleural cavity. Probably much of the discharge which he had in the first few days was due to that condition. The great danger of draining a subphrenic abscess as he did is that of infecting the whole pleural cavity. I had that experience once in a case where I had no choice of draining otherwise and the result was an empyema.

The majority of our textbooks on anatomy teach that reflections of the pleura are at the seventh rib in the mammary line, at the ninth rib in the axillary line and at the eleventh rib behind. I found in my cadaver work that these lateral reflections are as low down as the tenth rib, so that the operation of choice in draining a subphrenic abscess and many abscesses of the liver is to make the incision over the tenth rib; resect an inch of the tenth rib, push up the diaphragm and then go in subphrenically.

Dr. Goldspohn (closing): I am not so discouraged about the circular end-to-end anastomosis of the large bowel, as by utilizing the omentum and not making the error with the drain, there would be a fair success, I think.

As to the suggestion with reference to getting at the abscess without entering the pleural space, that was impossible in my case. The infiltrated pleura could not have been detached. The girl had been sick for three weeks with dia-

phragmatic pleurisy and the space was obliterated. There followed no evidence of infection of the general pleural cavity; the lower part of the general pleural cavity was practically walled off by the previous pleurisy.

DISCUSSION ON THE PAPER OF DR. ROGERS

Dr. J. F. Hultgen: If there is one field in medicine in which physicians should cooperate it is that of intracranial surgery, especially for the relief of intracranial pressure. In the Field museum one sees numbers of Peruvian skulls with holes in them. Decompression operations must have been done many years ago, so that we are not the first in the field. Robert Witt described hydrocephalus ventriculi and nothing can be added to his description. Then came the anatomists, the physiologists and finally the pathologists and bacteriologists. These conditions used to be called meningitis and it was not until the advent of bacteriology that the diagnosis was made.

Then the ophthalmologist stepped in and investigated the nature and origin of papilledema, and von Schulten placed our conception of this condition on a sound basis, with, perhaps, too much mechanical conception of the effect. Alkan found in 1872 that there was a connection between all the cavities and spaces in the brain. Until then they had been considered each as a closed cavity. The foramina of Majendie, Luschka and Monro were feared but their significance not understood sufficiently well.

Some years later Schwalbe found that the intervaginal spaces of the optic nerve connected with all the cerebrospinal cavities. He laid the foundation for the mechanical conception of papilledema. Parinaud, Gowers, Leber, Kuchmann and others did not agree with the theory that in all conditions producing intracranial pressure, particularly tumors, there was a biologic cause, namely the production of toxins; that there was an irritation, an inflammatory as well as a mechanical factor.

What concerns us mainly is the recognition of intracranial pressure and here we must take a middle ground. Experimental surgery has furnished a beautiful parallel to the clinical observations. Cushing and Kocher enlightened us on the mechanism of acute intracranial pressure. Chronic pressure is not susceptible to animal experimentation because of the time element. Still, we cannot afford to accept the evidence of experimenters alone and judge our cases on the basis of pathology only.

The diagnosis of acute hyper-pressure is easier than that of chronic pressure, and it is also easier to treat. The tumor cases are not any more encouraging than they were. All we can do in the chronic hyper-pressure cases is to recognize the mischief in the brain.

As to the localization value of the symptoms, as Dr. Rogers stated, they do not help us much. The papilledema is of great localization value, except when it comes late, but it does not give us any idea as to size and relationship. The subject of muscular rigidity is not well understood. I do not believe that those cases are all due to irritation of nerve endings.

Serous meningitis is not at all infrequent, even in children. The meningeal serous cavities must be considered like the pleural cavities. We must also study the patient as well as the disease. Polioencephalitis was considered by Lawson Tait years ago and quite correctly. The etiology and pathology are still not understood.

Dr. Rogers said nothing about lumbar puncture. It is of great value in diagnosis and prognosis and sometimes in the treatment of various intracranial hyper-pressure cases. If done in the prone position, with the patient resting several hours before the puncture as well as after, nothing untoward will happen. The value of such puncture in cranial injuries, as skull fractures, I cannot recommend too highly. When the fluid is quite bloody, we may proceed to operate and we usually find the source of the hemorrhage. If the blood is hemolytic and shows bad corpuscles, half hemolytic corpuscles, the evidence is rather in favor of intracranial hemorrhage. After skull fracture or operations of any sort, it is

quite well to do lumbar puncture on the third day to relieve severe headache and without doing the patient any harm.

The treatment of serous meningitis by lumbar puncture is sufficient. I see no reason for decompression when we can accomplish the same thing by lumbar puncture. Nonne reports eight cases of cured serous meningitis after lumbar puncture.

The study of hyper-pressure involves a consideration of hydrostatics and hydrodynamics of the brain with a complete knowledge of all the functions of the centers. So that it is more useful in the diagnosis than in the prognosis.

Dr. M. L. Harris: Brain surgery has been looked on as being rather unsatisfactory. There is one phase of the subject, however, which is rather satisfactory, and that is, if the friends do not object you can usually get an autopsy because most of the patients die. The acute cases are the most satisfactory so far as permanent recovery and benefit is concerned. In the acute traumatic cases with hemorrhage, when the hemorrhage is on the surface, whether intradural or subdural, the results are most brilliant when the clot is removed and the hemorrhage controlled. In these cases one might emphasize the old rule laid down by Kroenlein years ago that when you do not find the hemorrhage on the side expected, look on the other side.

I recently had a case at the Alexian Brothers Hospital, a traumatic extradural hemorrhage. The skull was opened on the side opposite to the paralysis and nothing was found. There was no injury of the scalp to indicate the side of the injury, but there was a hemorrhage on the opposite side, on the same side as the paralysis, a typical middle meningeal, extradural hemorrhage.

The condition of the pupils is of no significance whatever as a localizing symptom. If there is a persistent deviation in the pupil from the normal the only significance which can be attached to it is that there is some intracranial lesion, but it is of absolutely no value as a localizing symptom.

In these acute head injuries where there is a definite injury to the brain, lacerations or multiple hemorrhages, decompression operations do no good. These patients die from the severity of the brain lesion and the resulting edema. Decompression does not relieve the edema, in fact, it is likely that relieving the pressure will increase the edema and so hasten death.

In the chronic cases we must recognize that intracranial pressure is not uniform. That has been recognized by different operators when they have done double decompression operations at the same sitting. Marked increased tension on one side of the skull may be found and normal or decreased tension on the other. That has been found so frequently that many surgeons refrain from doing a double decompression when a single operation will do all the good that can be accomplished. That means that we must make a localizing diagnosis. The pressure is not the same above as below the tentorium.

Those are points for diagnosis and unfortunately diagnosis has not advanced to the point where we can differentiate local hypertension from general hypertension. If anything is to be accomplished by decompression it must be done early before the pressure reaches a certain point. Experimentally it is impossible to reduce the pressure more than about 20 mm. of mercury by decompression. If the pressure has gotten beyond the point where reduction of 20 mm. will do any good, decompression will not do any good. We must anticipate intracranial pressure if we expect good from the decompression operation. After the pressure has reached the point where the respiratory or cardiac centers are affected, decompression does not give relief, nor will it restore eyesight once it is lost. It must anticipate the loss of vision if it is to do any good.

Dr. L. Harrison Mettler: Brain surgery is not so dangerous as it used to be considered. I do not think, however, that we ought to go so far as to say that it is as safe as operations upon any other organ of the body. With a careful and experienced operator, the mortality is only about 19 per cent., according to Duret's recent analysis of 400 cases of brain tumor. This is better than von Bergmann's statistics which showed a mortality of about 25 per cent. This is most encouraging in view of the great seriousness and difficulty of these opera-

tions. Here as elsewhere, perhaps more so, the statistics must be studied in connection with the skill of the operator, the time of the operation, and the nature and location of the neoplasm.

I desire to emphasize that in all operations for intracranial pressure the benefit to be gained will depend chiefly upon the acuteness or chronicity of the case. In fact here lies the crux of the whole matter. Acute cases give much better results, under all circumstances, than chronic cases. In fact, if the pressure has been of very long standing some slight, temporary ameliorations may be obtained by craniotomy but marked benefit cannot be hoped for by reason of the irremediable changes that have been established in the long compressed neurons. This is a most important fact to take into consideration in every case of contemplated operation for intracranial pressure. On the one hand is the seriousness of the operation; on the other the possible, permanent degenerative changes in the compressed neurons. Is the latter of sufficiently recent onset to warrant the risk of the former, is the question for the neurologist and surgeon both to weigh most carefully. The double-sidedness of this question indicates the necessity of this double consultation in every case. An early diagnosis therefore, followed by a prompt operation is the chief element of success in this branch of surgery.

As the essayist has said, pressure is the dominant factor in the symptomatology of these intracranial cases. In the acute cases it is most often the cause of death; in the chronic it is the instigator of the degenerative processes that reveal themselves in blindness, paralysis, contractures, and mental aberrations. It not only acts directly in destroying the brain tissue but it so affects the circulation that this again modifies deleteriously the local and general vitality of the encephalon. Hence to relieve pressure is always a thing to be desired in these cases. But how always to do that is again the question calling for the most careful consultation upon the part of neurologist and surgeon together. If the original source of the pressure, the neoplasm, whatever it be, solid tumor, abscess, hemorrhagic clot, depressed bone, can be removed it should be done. This will necessitate an accurate localization diagnosis and a careful consideration of the accessibility of the tumor. If the original source of the pressure is so localized as to be beyond the reach of the surgeon's knife, decompression after the manner of Cushing is a commendable procedure to save life when done promptly in acute cases, and to prevent further destructive degeneration in the less acute cases. In the more chronic cases decompression will afford but slight benefit except in the relief of some subjective symptoms like headache or where an associated hydrocephalus is present.

Several years ago a patient was sent to me from Nebraska with a tentative diagnosis of Friedreich's disease. The boy was about 8 or 9 years of age and presented a fairly accurate symptomatology of this disease except for the head. Upon a rapid examination of the case when the boy first presented himself at my clinic, I concluded that I had an intracranial pressure to deal with and not a primary degeneration such as is observed in Friedreich's ataxia or hereditary cerebellar disease. I demonstrated the case, at the time, in my clinic as a possible cerebellar tumor or abscess. Nine months previously the lad fell from his pony and hit the top of his head. There were no immediate bad effects and he resumed his play in a short time. Six months after this fall the child's gait became wobbly and uncertain. He grew duller mentally. The parents thought his power of hearing diminished, though this was probably only the result of mental apathy. About this time he suddenly went blind. After a time his vision returned, at least in part. His father told us that at times the boy would see perfectly; at other times he would seem to be absolutely blind. After a period of blindness he would suddenly recover even the most delicate perception of color as well as of light and form according to the father's testimony.

When I first saw the patient, nine months after the fall, he was completely amaurotic without any marked changes that I could detect in the fundi. From five well known ophthalmologists to whom I submitted the boy for examination, I obtained three opinions. Two found the fundi normal and considered the visual

trouble to be hysterical. Two thought they detected signs of a primary atrophy of the optic nerve. One, who said he had seen a similar case, told me that he could see the beginning of a neuroretinitis but no sign, as yet, of atrophic degeneration. As for myself I was inclined to adopt the last opinion.

The boy's gait was distinctly cerebellar and ataxic in type. The knee-jerks were highly exaggerated. The Babinski phenomenon was easily obtained. The Gordon and Oppenheim reflexes were present; and the ankle-clonus was positively observed. There was very little if any actual muscular palsy.

The sensory findings were hard to elicit on account of the mental dulness present but I thought there was a distinct analgesia and some diminution of the touch and temperature senses. No spontaneous pains in the head or elsewhere were complained of.

The same week in which I saw the patient for the first time, I took him before the Chicago Neurological Society, but my confrères there declined to commit themselves to a positive diagnosis.

Two months later the child was brought to my office and now, even more forcibly than before, I urged an operation because I felt convinced that there was extreme intracranial pressure present, due possibly to a cerebellar neoplasm.

The child was still blind but the fundi were normal according to two capable ophthalmologists. The hearing was normal. Mental dulness was marked. Spastic contracture, with all the usual accompaniments, was pronounced in the limbs, especially the legs. Speech was very defective. Movements of the tongue and lips were labored. Respirations were slightly enhanced. Skiagraphs taken of the head suggested abscess of the cerebellum which I localized in the left lobe.

At my request patient was operated on by Dr. T. A. Davis. No abscess was found at either of the two operations, done a week apart, upon either side of the occipital bone. At the second operation, upon the left side, the dura was opened, a large amount of serous fluid poured out and an adhesive meningitis circumscripta was noted.

When put back to bed the spastic condition of the limbs gradually disappeared and the attendants declared there was a slight improvement in the mentality. It was said that the child followed a light with his eyes in the course of a few days but of this I have a different opinion.

Against my special request the boy was taken back to his home in Nebraska at the end of a week. His family physician wrote me that he lived about three and a half months longer, ultimately dying in the hands of another attendant who declared that the child's entire trouble all along had been in the bowels. An autopsy was refused.

I cite the case as an illustration of what ought to be done in this class of cases. Had an earlier diagnosis and operation been made in this case I believe the boy's life would have been saved and probably his brain functions.

Dr. B. F. Orndorff: In the administration of salvarsan in these cerebral syphilis cases we get practically no result. We have more confidence in the mercury. There was a certain degree of improvement with the two combined, but the percentage of improvement was very low, not 50 per cent. After a time we treated a number of cases with salvarsan and mercury following the decompression operation and the improvement has been much better, slight, as a rule, however. I would not advise giving the salvarsan without the mercury or mercury without the salvarsan. The two combined work very well.

Dr. J. Holinger: Dr. Rogers places considerable responsibility on the general practitioner for the diagnosis of brain pressure. I do not think that that is right under all circumstances. The diagnosis of brain pressure is often a very difficult matter. Especially is this the case when what Dr. Harris mentioned as localized pressure is present. Allow me to cite two histories, one of acute, one of chronic brain-pressure: 1. A lady with a history of headaches since childhood, increasing in severity lately; ringing in the ears, especially on one side, dizziness and difficult hearing. I examined her carefully and came to the conclusion that she had a brain tumor. One of our neurologists examined her and denied the existence of a brain tumor. Shortly afterward an operation was done, and there was so much

pressure that on opening the dura brain tissue forced itself out into the opening with so much force that we had to close the incision quickly to prevent the loss of large quantities of brain tissue. The tumor was seen but could not be removed. That was an unusual degree of chronic intracranial pressure.

The second patient was a young man, a baker. He had a suppurating middle ear for years. He developed acute headache. After a hard night's work he went to the Alexian Brothers Hospital, walking much over a mile. A few hours after his arrival he became unconscious and died the same evening. On opening the skull a suppurative meningitis was found extending over the whole base of the skull with decided intracranial pressure. Surely a general practitioner could not be held responsible for failure to make a diagnosis in such cases.

These two histories were reported to show that often a diagnosis of brain-pressure is one of the most difficult tasks. It is true that many cases are typical and easy, but at times even the expert will make mistakes. Dr. Rogers created the impression that the diagnosis of brain-pressure was a simple and easy problem; I did not find it so in my experience.

Dr. Geo. F. Suker: The question of choked disk in reference to brain pressure is of much greater value than the majority believe. You cannot have a choked, more properly an edema of the disk, which represents an extension by swelling of the disk fibers into the vitreous, unless there is pressure outside of the eye ball proper. There can be no choked disk from pressure within the eye proper. Therefore, the pressure must be retrobulbar or in the brain. The size of the edematous disk or its appearance does not give any clue as to the exact location of the pressure within the brain. Bilaterality is of no value. The size of the tumor is not in correspondence with the early appearance or size of the choked disk. The smallest brain tumor may give the largest choked disk, and vice versa. Occipital tumors are most prone to give a bilateral papilledema.

A large percentage of brain tumors engender a toxic condition, and then in addition to the choked disk you have an optic neuritis of a toxic character, which is a retrobulbar neuritis and has a definite symptomatology. And, as all tumors are "more or less toxic" in nature, we have early toxic amblyopia, which may exist for a time before we get a choked disk. This toxic amblyopia is readily recognized, and the earlier we operate the better the result, because these cases are always acute.

The greater the choked disk is on one side, the greater should be the tendency to locate the tumor on the same side of the brain. This is due to physical conditions because of the various partitions of the brain.

I do not fully agree with Dr. Harris that when blindness once is present that a decompression is of no value. There may be marked choked disk and no loss of vision. Decompression always causes a moderate recession of the choked disk. Vision lost in choked disk is not lost because of the choked disk, but because of the secondary optic neuritis, the secondary involvement of the nerve from pressure.

Again, you may have symptoms relative to pressure and get a visual field that you get in a hysterical patient, namely, inversion of colors. If you will observe these patients and eliminate the hysteria element, and get an inverted color field, with a central scotoma for colors—particularly red—and some other general brain tumor symptoms, you can almost say that you have intracranial pressure somewhere, or that you are dealing with a brain tumor on one side or other.

A brain abscess or cyst will produce the same optic-nerve lesion as a brain tumor, though the assumption is made that you can distinguish them by the nerve head appearance, is but a hair-splitting diagnostic point of no significant value whatever.

Dr. J. P. Grimes: The Wassermann test may be positive in brain tumor not syphilitic in origin. In Dr. Bevan's clinic three or four cases were treated antisyphilitically, salvarsan and mercury, in which the tumor proved to be a cyst or something else. So that the Wassermann test is not of much value in brain tumor.

Dr. Rogers (closing): It is impossible to cover this entire subject in a limited paper. A German writer, Zangemeister, reported in the *Deutsche medizinische Wochenschrift*, Oct. 12, 1911, p. 1879, three cases of eclampsia in which he did a decompression operation. In two cases the spasms stopped immediately and the patients recovered. The other patient died during the operation.

Lumbar puncture should always be done in these cases and the cerebrospinal fluid examined. A complete laboratory examination of all the secretions should be made in every one of these cases.

These patients never have any headache after the operation, so that I do not have to treat the headache. As soon as the pressure is relieved there is no more suffering. Most of my patients get well if the case is acute, and I have had chronic cases where the result was worth while. Every patient should be examined by an oculist of experience, and the sooner the better. Blindness can be prevented in every case. When the general practitioner and the specialist work together with the laboratory man the diagnosis will be made earlier. That is not criticizing anybody. It is simply a plea for cooperation.

In every case of chronic intracranial pressure a decompression should be done to relieve suffering and prolong life, even if there is no hope of a cure. A decompression operation does not decompress unless the dura is opened.

CHICAGO LARYNGOLOGICAL AND OTOLOGICAL SOCIETY

Regular Meeting, March 19, 1912

A regular meeting of the Chicago Laryngological and Otolological Society was held, March 19, with the president, Dr. Joseph C. Beck, in the chair.

TUMOR OF THE NASOPHARYNX

DAVID FISKE, M.D.

Dr. David Fiske presented a patient with a tumor of the nasopharynx. The patient was man aged 25 years; family history good on both sides as regards any history of malignant tumors; no history of luetic infection. Patient is in very good physical condition. About two years ago he became aware of a growth in the nasopharynx which he supposed was an adenoid development, but consulted no one about it. About six months ago he found that the growth was beginning to fill the throat pretty closely and at that time had several general physicians look at it but obtained from them no diagnosis of the probable nature of the tumor. Dr. Fiske wished to get the opinion of some of the members of the society on the probable diagnosis, after which he intended to operate and remove the tumor and report later the pathologic findings.

DISCUSSION

Dr. William L. Ballenger said that the case impressed him as one of a hard fibroma, but, of course, it is impossible to say absolutely what it is until the pathologic findings are made. As to removal of the growth, it seemed to him that the best method would be to take Brandegee adenoid forceps, grasp it deeply and firmly, and by twisting, pulling and cutting to slowly remove it *en masse*. This method would guard against hemorrhage to a very considerable extent, and is a very simple and easy method. He has used it in a number of fibromas and sarcomas of the nasopharynx and it is a splendid method for removing growths in that location. In one case in which he removed a soft fibroma attached to the base of the sphenoid, after pulling it loose he found a hole in the base of the sphenoid through which he could put his finger. In this case he had to do a ligation of the external carotid, the hemorrhage was so severe: that is, he tied one side, and then proceeded with removal of the growth and no further serious hemorrhage followed. By using the Brandegee forceps, which is very powerful, with a very broad cutting edge, one can remove almost any growth in the nasopharynx, provided it does not enter too deeply into the bony tissue. So long as the growth is limited to the soft tissues almost any growth in the nasopharynx can be removed with these forceps.

Dr. Joseph C. Beek said that if examination of the specimen showed the growth to be a malignant one, he would suggest that, in addition to the operation advocated by Dr. Ballenger, the soft palate be split as far as the hard palate, in the middle line, or slightly away from the middle line. This gives a better exposure.

Dr. C. M. Robertson said he thought it a case of fibrosarcoma and that it extended out of the throat beyond the superior constrictor muscle. He thought that it would be a case for more radical measures, requiring external operation for its removal.

THE FOLLOWING CASES WERE PRESENTED BY

CHARLES M. ROBERTSON, M.D.

CASE 1.—Diphtheritic paralysis of the tongue and soft palate. Mrs. E. F., aged 33 years, Irish, housewife. Two months after diphtheria a paralysis of the left side of the tongue and soft palate developed, which caused difficulty in swallowing both solids and fluids. Fluids were returned through the nose. Voice very defective. The diphtheria was very slight as no medical treatment was given the patient. At the time of presentation the paralysis is already beginning to disappear under medical treatment.

CASE 2.—Fibrosarcoma of the nasal cavity, treatment and cure. Miss R. A., aged 15 years, Italian, bookbinder, presented herself with a growth in the right nostril occupying the floor of the nose just inside the vestibule. The tumor growth was removed and recurrence took place in three weeks to the former size which was as large as a lima bean. Case was then referred to the radiologist who has given sixteen exposures resulting in the almost complete disappearance of the tumor.

CASE 3.—Round-celled sarcoma of the larynx (parasymphilitic), operation by laryngeal fissure, and cure. Mr. G. M. W., aged 50 years, German, storekeeper, was operated on twenty-six months ago for a round-celled sarcoma involving the right cord to the extent of its posterior three-fourths and extending upward involving the ventricular band to within 4 mm. of the upper edge of the glottis. The growth extended backward, occupying the right half of the intra-arytenoid space to a point near the base of the left cord. The operation was done under chloroform by laryngeal fissure, excising the entire half of the larynx which was followed by the application of the actual cautery. The case has remained stationary since the operation. The voice is very good, having the sound of one suffering from a slight laryngitis. The larynx had the appearance of a subacute laryngitis and if one did not know the operation had been performed one would not suspect by the laryngoscopic examination that the cord was absent.

CASE 4.—A case of mastoiditis followed by thrombosis of the jugular bulb and vein, operation and cure. Miss E. D., aged 19 years, presented herself with mastoiditis in the right ear of three weeks' standing, caused by pneumococci. Her temperature at the time of admission to the hospital was 103, pulse 120, respiration 22, at 4 p. m. A meatomastoid was performed the following day. The outer cells of the mastoid were found comparatively free but in the deep cells over the sinus and in the tip much pus and granulations were found. The sinus was examined but not opened as it looked healthy. The following day the patient rested comfortably, the temperature falling to 99.2. On the second day the temperature fell to 97.4 and the patient felt fine. On the afternoon of the second day the temperature suddenly rose to 103.6. There were no other symptoms except a slight soreness in the throat. On the third day the throat appeared much like a scarlet fever throat. Rheumatic pain of severe type was experienced in the left arm just above the elbow. On the fourth day a rash appeared over the upper chest which did not have the appearance of scarlet fever rash. At this time the *tâche cérébrale* became well marked on the abdomen. The temperature began to assume a pyemic type, but there were no other signs of pyemia. On the fifth day the pain in the arm abated, the redness in the throat and on the chest disappeared and the patient began to experience pain in the right side of the neck extending from the tip of the mastoid as far as the lower third of the sternomastoid muscle.

The neck was swollen and was painful on turning the head either way. The temperature ranged from 100 to 103.6, rising and falling in the course of an hour or two.

It was noticed that a small goiter which had been present began to enlarge to a very tense mass, causing difficulty in breathing.

The blood count on admission to the hospital showed 15,000 white count, with 78 per cent. polynuclears. The white count increased to 20,000 on the fourth day after the operation but with the same percentage of polynuclear cells.

On the following days the swelling in the neck subsided, but the temperature continued pyemic, with no evidence of rigors, nausea or sweating. The patient was rational, the kidney and bowel action normal.

On the tenth day it was decided to open the sinus and if necessary to extend the operation into the neck, exsecting the jugular. On the morning of the second operation the temperature was 101 and the white count had fallen to 16,000 with a differential count of 78 per cent. polynuclear cells. The mastoid wound, which had been closed for six days, was opened and the cavity was found nearly healed with healthy looking granulations. The mastoid was cleared and the lateral sinus exposed to its fullest extent. After examining the sinus, which appeared a little thick but soft, the contents of the sinus were pushed backward by the end of the finger, beginning at the nearest point to the bulb, to a point as far back as possible. This was done to demonstrate whether or not the sinus would fill from the bulb. As this did not occur it was clear that the bulb was thrombosed. After placing a gauze pack at the cranial end of the sinus the sinus was opened in its entire length. Gentle curettage was made of the bulb in order to establish a blood flow from the bulb and thus wash out the clot into the sinus. The bulb was found filled with pus and granulations and no flow followed the curettage. The operation was then extended into the neck exposing the jugular as low as the superior thyroid vein. The thyroid vein was found patulous and the jugular was cut, therefore, just above the point where the superior thyroid vein empties into the jugular. After dividing the jugular there was a fibrinous clot about 1 inch in length expelled, followed by free bleeding from the vein. A double suture was applied to the lower end and the upper end of the vein explored and about 30 to 40 drops of pus were obtained, which with granulations were contained in the vein above the fibrinous clot which was expelled. The neck wound was closed save at the lower end and the upper or mastoid portion was dressed open. On the day following the operation the goiter diminished in size in a few hours and has remained small since.

This case is of special interest because it shows:

1. That an infection of the sinus could occur without the presence of a thrombosis of the sinus itself.
2. An examination of the sinus at the time of the mastoid operation may fail to detect the presence of an infection in the sinus.
3. The failure of the polynuclear count to indicate the condition; it never having been above 78 per cent., which is only 3 per cent. above normal.
4. The amount of infection which may occur in these cases with practically no symptoms to warn the surgeon of the great danger.
5. The value of the *tâche cérébrale* in sinus and meningeal cases although it may occur in scarlet fever and vasomotor disturbances.
6. The value of the temperature chart associated with tenderness over the affected area.
7. The disappearance of the goiter which was probably caused by damming back the blood by reason of the superior thyroid vein being closed.
8. The importance of early surgical interference.

DISCUSSION

Dr. Frank Allport said that Dr. Robertson appears to place too much confidence in the polynuclear count in Case 4, which did not exceed 78 per cent. There is no absolute standard of percentage of polynuclear count; a normal percentage is from 65 per cent. to 70 per cent. Dr. Allport would look with suspicion on a

suppurative case that had a polynuclear percentage of 75 or 78. His experience would lead him to believe that 78 per cent. was significant. He thinks the preponderance of opinion is that the normal polynuclear percentage is from 65 to 70, and when you get above that you should look for trouble.

Dr. William L. Ballenger referred to a case of carcinoma of the larynx in a man aged 33 years, on whom he did a total laryngectomy a year ago last September. The man is still alive and has gained 35 pounds. Although he is hoarse he has still a good voice. There are not many cases on record where a good voice is retained after total removal of the larynx. They speak with the air that is in the pharynx rather than with the inhaled or exhaled air.

Last week he operated on a case of thrombosis in which the whole sinus was involved as well as the bulb; the thrombus extending back into the median sinus. Pus and blood were found in the upper portion and a solid clot below. On manipulation it gave a sensation of erepitis as of air. With euret he succeeded, after some difficulty, in getting a flow of blood from below. The patient is still running a septic curve. On April 11, 1912, the patient was rapidly recovering.

Dr. Robertson in closing said that the reason his patient had not been given the benefit of a complete laryngectomy was because he was a syphilitic, a fact which made the prognosis more favorable, since such cases are not as virulent as when a carcinoma or sarcoma develops without specific infection.

SPECIMENS OF FOREIGN BODIES REMOVED FROM THE BRONCHI AND ESOPHAGUS

SHOWN BY S. A. FRIEDBERG, M.D.

The first specimen was that of an intubation tube which had broken off at the collar on an attempted extubation. The skiagraph showed the tube in the right bronchus. Removed by lower bronchoscopy.

The second specimen was that of the outer part of an aluminum tracheotomy tube. The skiagraph was negative; the tube was found in the right bronchus and removed.

The third specimen was that of the fourth wheel in pinion of a small clock which had become lodged in the esophagus. Removed by direct esophagoscopy.

SOME NASAL EXPRESSIONS OF SYSTEMIC CONDITIONS

FRANK BRAWLEY, M.D.

CHICAGO

For several years I have been interested in the possibility that some of the local nasal conditions which prove resistant to treatment might be symptomatic of some type of general disease.

While I have not searched the literature exhaustively, in the numerous textbooks and section reports in our special work which I have examined, very little has been found on this subject.

Ballenger¹ refers to his case of coryza edematosa involving the nasopharynx and velum-palati. The mucosa of these areas was swollen, gray and semitranslucent like urticaria. As a probable causative factor he mentions digestive disturbances. He also refers to a case reported by Matas, which showed a periodicity running from 11 a. m. to 12 m. daily, and thought to be due to the plasmodium of malaria.

Kyle² has considered the general side somewhat extensively. Among other nasal conditions he believes that hyperesthetic rhinitis may be due to general disease. He gives as etiologic factors digestive disturbances, constipation, colitis and intestinal parasites. These conditions may cause turgescence of the nasal mucosa, thickening and altered secretion.

1. Ballenger: Diseases of the Nose, Throat and Ear, p. 250.

2. Kyle, D. B.: Diseases of the Nose and Throat, pp. 50, 192.

The four cases which I present briefly to-night represent nasal syphilis, simple hyperesthetic rhinitis, hyperesthetic rhinitis with secondary thickening and hypertrophy of turbinate tissue and purpura hemorrhagica involving the nose. The cases represent as many different groups, the largest group in my experience being made up of the cases of hyperesthetic rhinitis of mild degree. The case of lues is given, not because nasal lues is rare, but chiefly because of the interest attached to the use of salvarsan and the possibility of error in diagnosis.

Mrs. J. B. P., aged 30 years, presented herself Aug. 4, 1911, with the history of a nasal cold, with yellow discharge for the previous six months. This cold with obstructed left naris dated from a fall which injured the left side of the nose. Vertical headache was constant and pain in the left side of the neck and in the teeth of the left upper jaw. On examination cocain and suprarenalin produced no effect on the turbinate tissues. An irregular granuloma-like mass, pale gray in color, was seen pressed against the septum anteriorly, and postnasally it seemed to replace the inferior turbinal, entirely blocking the choana. Trauma produced almost no bleeding. Trocar puncture and irrigation of the left antrum revealed a small amount of pus. The following day a slight lessening of the turgescence of the turbinates was observed. The growth was suggestive of either sarcoma or a luetic granuloma. Wassermann reaction was strongly positive, and Dr. B. C. Corbus administered an intravenous injection of salvarsan. The patient reported marked relief in twenty-four hours. When examined sixty hours after the injection the nose seemed practically normal, all turgescence and granuloma having disappeared, except a small rough granular area at the juncture of the anterior and middle thirds of the left inferior turbinal. Locally, ammoniated mercury ointment 10 per cent. was used.

L. H., female, aged 12 years, first seen March 2, 1910. History of attacks of sneezing for one year, with the exception of summer. Paroxysms greatest in the afternoon, when it was not unusual to sneeze 200 times. The attack lasted from one to two hours. Noticed that before an attack she would become hoarse and the throat would feel dry. Some relief was obtained by her family physician for a time by means of cocain sprays, but after a short time they seemed to produce no effect. The nose showed some turgescence of the turbinates, contraction under cocain and suprarenalin being slow but apparently complete. No evidence of accessory sinus disease was found.

Instructions were given for a collection of a twenty-four-hour urine specimen and the patient sent to the hospital. The chief features of the analysis were the high degree of indican, sulphates, urea and ammonia which were present. General eliminative measures and a low proteid diet were ordered, and a report twelve days later stated that the attacks disappeared in five days. A second analysis, March 15, 1910, showed no indican, and was in general about normal, the urea being below normal, however, due to the limited nitrogen intake. One year later one attack occurred, which was relieved by following the original treatment.

Uranalysis.	March 4, 1910.	March 15, 1910.
Amount 24 hours.....	1,020 c.c.	1,860 c.c.
Specific gravity	1.022	1.016
Total solids	51.50	70.83
Acidity, degrees	28.	18.
Acid units	28,500	33,480
Urea, per cent.....	2.02	0.35
Total urea, 24 hours.....	21.11	7.79
Indican	excess	no
Chlorids	2.50	1.90
Phosphates	10.	5.70
Ammonia	1.36	0.8
Sulphates	4.10	1.14

Mrs. A. W., aged 30 years, came Jan. 18, 1912, with the history of nasal catarrh for many years, and for the past year a continuous cold in the head and almost complete nasal obstruction to breathing. The entire nasal mucosa, and especially the turbinate bodies, showed pale, translucent edema. The membrane was

hyperesthetic, with much daily sneezing and watery secretion. No evidence of nasal accessory sinus involvement could be found, and very little contraction of the turbinal tissues occurred after liberal use of cocain and suprarenalin. As she stated that her general condition was bad, a twenty-four-hour urine collection was examined quantitatively, and showed chiefly excessive indican and the presence of acetone and diacetic acid. At once the proteid intake was limited; colonic flushings nightly with a tablespoonful of liquid petrolatum daily was ordered. Five days later patient reported that the nose was more open and that she could breathe better than in nine months. The edema showed at least a 50 per cent. shrinkage throughout the nose. The bowel flushings washed out huge clots of mucus and the fecal masses were very hard with a most disagreeable odor.

Her family physician has been called on to assume the future care of the case. The last report was made March 15, 1912, when patient stated that she had felt so much relieved that treatment has been discontinued. The posterior turbinal hypertrophies are one-half their former size, but naturally will require removal, as also will small hypertrophic areas at the anterior ends of the middle turbinals before a complete cure may be expected.

Uranalysis.	Jan. 22, 1912.
Amount, 24 hours.....	1.400 c.c.
Specific gravity	1.017
Total solids	55.45
Acidity, degrees	30
Acid units	42,000
Urea, per cent.....	1.2
Total urea, 24 hours.....	16.80
Indican	***
Acetone	*
Chlorids	1.96
Phosphates	5.6
Indol, diacetic acid.....	*
Ammonia	0.36
Sulphates	0.7

E. T., female, aged 8 years, was first seen Dec. 7, 1909. Two years previously she had pneumonia, which was followed by severe nasal hemorrhages associated with petechial areas over the body. These hemorrhages were so severe as to require tamponing the nares on an average of every second day during the previous year and seven months. Dilated vessels were found on both sides of the nasal septum, especially its anterior one-third, and at one time a small spurter was seen, a small branch of the lower septal artery. At times petechiæ were noted in the skin covering the nose and in the pharynx. Destruction of the septal vessels gave only temporary relief.

Jan. 3, 1910, a quantitative analysis of a twenty-four-hour urine collection revealed a highly concentrated urine, 80 degrees acidity, sugar, albumin, excess indican and bile. A blood count showed marked anemia; hemoglobin 30 per cent. Patient was placed in the hospital and petechial areas found over the entire body, the soles of the feet resembling large blood blisters. Active elimination was instituted, including high colonic flushings, twice daily. Thyroid and thymus extract with calcium lactate were administered and a low proteid type of diet given, with 2 quarts of water daily. Saccharated iron was given in 5-grain doses and atropin sulphate 1/100 gr. t.i.d. The metabolism was studied and regulated by Dr. Gordon Burdick of the Burdick-Abel Laboratory, who cared for the ease from this time on. The systemic treatment resulted in reducing the severity and frequency of the hemorrhages, but they still occurred occasionally following trauma. The septal vessels were cauterized several times. After two or three months of the above treatment, 2 ounces of normal horse serum were injected, which had the effect of altering the periodic hemorrhages, as well as lessening the severity. There has been only one slight hemorrhage in the past year, which was easily controlled by administration of atropin. The results of the laboratory examinations follow:

Uranalysis.	Jan. 3, 1910.	Jan. 8, 1910.	Jan. 11, 1910.	Feb. 10, 1910.
Amount 24 hours.....	400 c.c.	1,600 c.c.	1,560 c.c.	1,050 c.c.
Specific gravity.....	1.040	1.010	1.015	1.020
Total solids	37.28	39.28	42.42	46.75
Acidity degree	80	8.	8.	18.
Acids units	32,000	48,000	62,400	18,200
Urea, per cent.....	2.90	0.25	0.25	1.01
Total urea, 24 hours...	11.89	5.75	6.85	10.97
Sugar	yes	yes	yes	slight trace
Albumin	trace	no	no	no
Indican	large trace	slight trace	no	large trace
Bile	yes	no	no	no
Chlorids	2.10	0.18	0.25	4.
Phosphates	4.	2.50	2.	2.30
Ammonia	1.348	0.050	0.04	2.10
Sulphates	no	1.10	0.70	3.50

Jan. 3, 1910. Blood count: Red cells, per c.mm., 2,800,000; red cells, 54 per cent.; hemoglobin, 30 per cent.; white cells, 2,400; white, 38 per cent.; color index, 0.46.

Blood smear. Differential count of 400 leukocytes. Normal cells: small lymphocytes, 18 per cent.; large lymphocytes, 10 per cent.; polymorphonuclears, 70 per cent.; eosinophils, 1.7 per cent.; mast cells, 0.3. Leukocytes: Pathologic cells: Poikilocytes, few. Parasites, not any.

These cases have been selected from a large number in which some systemic disease was found to be an important factor. It seems to me proper to urge more frequent consideration of these general relations. We would not only benefit our patients by having a proper uranalysis made, but we would be able to cooperate intelligently with competent internists in that large field where our special work overlaps theirs. We would be in a position to convince our patients of the necessity of placing themselves in the hands of the internist in the earliest stage of a disease process when the most satisfactory results are to be expected. I believe that such observation is to be looked upon as a step in advance toward preventive medicine.

DISCUSSION

Dr. Charles M. Robertson in discussion thinks that we can very often tell by examining the head the type of mastoid process to expect. In the round heads with a short anteroposterior diameter the mastoid is small and exostoses are often found. About a month ago in an operation on a case where the anteroposterior diameter was short the external canal was almost entirely occluded and the spine of Henle stuck out nearly half an inch.

Dr. William L. Ballenger stated that this subject is very well presented in a large work by Friedrichs, a German. The work has been translated and revised in two or three editions. It is a valuable work, full of information.

Dr. S. A. Friedberg wished to call the attention of the members to the work which has been done along this line by Richardson of Washington.

Dr. Joseph Beck said he would like to speak of a case of this kind that he had at the hospital, in which the question of nasal hemorrhages was of importance. He made a diagnosis, after being called to stop a nosebleed, of Schoenlein's disease. In this case the condition was produced by arsenic which the patient had been receiving for a long time, believing that it was possibly a specific disease. Since seeing this case another has come under Dr. Beck's observation, following the use of salvarsan, showing nosebleed and petechial eruptions. We have all seen the beautiful results from the use of salvarsan in syphilis, but he has recently seen some of these hemorrhagic cases, not only from the nose, but other places, which would not yield to any other treatment but the serum. He wished to call attention to these cases of hemorrhage, where no remedy will check the bleeding, and speaks of the fact that normal horse serum (5 c.c.) injected every day would check it. One must be sure not to leave off six or seven days, to get the time of anaphylaxis, which is a very serious condition. You can inject 5 or 6 c.c. every day

without any bad effect whatever, but if you should happen to get that time, not always six or seven days, sometimes as late as the tenth day, then very serious complications may result.

With regard to the time of anaphylaxis in injecting the serum: It is known that no sera of any kind should be injected twice in succession within a period of seven days. For example: If antitoxin were given to-day and not given any more until the sixth or seventh day, there may be a number of symptoms develop which are known as symptoms of anaphylaxis, that is, marked prostration, collapse and even death.

Fein has written a good work on the relation of the nasal symptoms to uterine disturbances, especially amenorrhea and dysmenorrhea. Periodical swelling of the nasal mucous membrane about the time of menstruation should not be treated as a nasal condition, as is so frequently done. The condition is one of gynecologic disease.

ARTIFICIALLY DEFORMED SKULLS WITH SPECIAL REFERENCE TO THE TEMPORAL BONE AND ITS TYMPANIC PORTION *

WALTER P. MCGIBBON, M.D.

CRAWFORD COUNTY

The Crawford County Medical Society met in regular session in the Carnegie Library, Robinson, Ill., May 9, at 2 o'clock. The meeting was called to order by the president and the minutes of the previous meeting were read and approved. The following members were present: Drs. Meserve, H. N. Rafferty, Carlisle, Wilson, Dunham, Davis, Newlin, Voorheis, Price, T. N. Rafferty, Martin, Kirk, Mitchell, Kalsdorf, Lowe and Henry. The Board of Censors reported that charges of unprofessional conduct had been preferred against Dr. A. W. Allen, and that after a careful investigation of the charges together with other evidence, in the opinion of the censors the charges were true and recommended that Dr. Allen be expelled from the society. It was moved and seconded that the report of the censors be received and the motion was unanimously carried by a standing vote.

Moved, seconded and carried that the secretary send a report of the proceedings to the secretary of the state board of health and to the secretary of the Illinois State Medical Society.

Dr. Wilson gave a short address on "Sterility in Females, Etiology and Treatment," which was discussed by the society.

This was followed by an excellent paper on "Syphilis" by Dr. Dunham. It was moved, seconded and carried that the paper be received by the society for discussion. The discussion was led by Dr. Kalsdorf and freely indulged in by the entire society, many salient and valuable points being brought out.

On motion duly seconded and carried the society adjourned.

A. LYMAN LOWE, Secretary.

EGYPTIAN MEDICAL SOCIETY

Twelfth Annual Meeting, June 13-14, 1912

The Egyptian Medical Society will hold its twelfth annual meeting in Creal Springs, June 13-14, 1912. The following papers will be read:

June 13.—"Malaria," H. W. Walker, Grantsburg. "Hygiene in Public Places," J. F. Hargan, Mound City. "Urinary Analysis," Geo. M. Heath, St. Louis. "Some Practical Points and Suggestions," J. W. Dixon, Hartsville. "Summer Diarrhea of Children," E. L. Cooley, St. Louis. "The Year's Progress in Surgery," Emory Lanphear, St. Louis. "Extrauterine Paeck Following Abortion," G. W. Ruddell, St. Louis.

* This paper will be published in a subsequent issue of THE JOURNAL.

June 14.—“An Illustrated Lecture on the Eye Muscles,” A. C. Ragsdale, Creal Springs. “The Differential Diagnosis and Treatment of the More Common Skin Diseases,” J. J. Houwink, St. Louis. “Pneumonia Without any Fever,” W. S. Dixon, Round Knob. “Remittent Fever,” Alonzo Glass, Eddyville. “Report of Cases of Middle Ear Trouble Treated by the Yankauer Method,” H. G. Reynolds, Paducah, Ky. “Chloroform and Ether Anesthesia,” F. C. Murrah, Herrin.

Thursday evening, June 13, the following public program will be presented at Ozark Park Pavillion: Song, “Illinois,” by the audience. Invocation, Rev. J. W. McKinney. Music, Creal Spring Orchestra. Address of Welcome, Mayor Whiteside. Response, Dr. P. S. Waters, Brookport. Music, Ozark Band. President’s Address, Dr. C. E. Trovillion, Metropolis. “Prevalance of Tuberculosis, Its Cause and Treatment,” Dr. C. W. Lillie, E. St. Louis. Music, Male Quartette. “The Duties of the Physician to the Profession and to the People,” Dr. H. C. Mitchell, Carbondale. Readings, I. L. Gifford and J. T. Kimball. Music, “God be with You Till We Meet Again,” by audience.

The following counties are represented in the Egyptian Medical Society: Williamson, Johnson, Massac, Pope, Saline, Hardin and Pulaski. The officers are: president, C. E. Trovillion; vice-president, W. S. Dixon; secretary-treasurer, A. C. Ragsdale; censors, W. A. Sims, W. S. Dixon and W. P. Sutherland; committee of arrangements, D. H. Harris, A. C. Ragsdale, W. P. Sutherland, J. J. Graham, and J. F. Blanchard. The program bears the following advice: “Don’t forget for the benefit of your health to visit our famous mineral water.”

FOX RIVER VALLEY MEDICAL ASSOCIATION

Meeting Feb. 13, 1912, held at the courthouse in Geneva.

The first quarterly meeting for the year 1912 was called to order by President Schurmeier, with thirty-five members present, as follows: Drs. Haan, Schurmeier, W. P. Sherman, L. A. Westgate, A. L. Mann, J. R. Tobin, G. J. Schneider, H. E. Keech, R. S. Denny, C. B. Slater, A. E. Diller, J. W. MacDonald, F. H. Daniels, C. A. Potter, R. G. Scott, H. G. G. Schmidt, W. H. Bishop, W. J. Calhoun, R. C. Taylor, L. J. Hughes, A. E. Sherman, G. F. Ruppert, O. L. Pelton, Sr., J. H. Gahagan, Fitts, W. H. Schwingel, Lambert, H. T. Hardy, McCauley, G. B. Schwachtgen, D. D. Culver, Petersen, F. Bauer, Krueger and O. L. Pelton, Jr. The report of the secretary and treasurer was accepted as read. The application for membership by Dr. Maginnis of Aurora having been favorably acted on by the board of censors, was unanimously accepted by the members.

The minutes of the previous meeting were read and approved without correction.

President Schurmeier made a strong plea for the members of our society to get busy and infuse a little life into the society. He said as we are now we are not recognized by any of the larger component societies. We must develop our individuality by the writing of papers and their discussion by the members within our society and have these papers published in the official JOURNAL of the Illinois Medical Society. Every one should bring one or more new applications for membership. There is no reason why we cannot have a membership of 125 instead of a little more than seventy-five.

Secretary Schwingel suggested that our society have a monthly bulletin, with news of interest to the members, together with the program of the following meeting. This, in the opinion of the secretary, would tend to keep up the interest of the members in society matters and bring them closer together medically.

Dr. O. L. Pelton of Elgin made a motion that a committee be appointed, with full power to act, in looking up the matter of a bulletin for our society. Seconded by Dr. Gahagan of Elgin. The motion was carried.

President Schurmeier appointed Drs. A. L. Mann of Elgin, J. W. MacDonald of Aurora and R. G. Scott of Geneva to act on this committee, and to report in full at the next meeting at Elgin in May.

The scientific program was then opened and the papers read and discussed in their order as follows:

1. "Diagnosis of Fractures," Dr. J. H. Gahagan, Elgin.
2. "A Plea for More Thorough Exploratory Work in Intra-Abdominal Operations," Dr. O. L. Pelton, Sr., Elgin.
3. "Tonsillectomy and Its Indications from the Standpoint of the General Practitioner," Dr. C. A. Potter, St. Charles.
4. "Cirrhosis of the Liver, with a Case Demonstration," Dr. John West, Batavia. (Dr. West was unable to attend because of illness.)
5. "Anesthesia, Kinds, How Anesthesia Is Produced, After Effects, etc., and Their Relation to Surgical Shock," Dr. J. W. MacDonald, Aurora, Ill.
6. "Diagnosis of Gastric Ulcer," Dr. Emmett Lehr Lee, Aurora.

Great interest was taken in the papers read by those members present and aroused much enthusiasm and discussion.

The meeting was adjourned at 4:30 p. m.

ANOTHER PLEA FOR LARGER INCISIONS AND MORE THOROUGH EXAMINATIONS AS A ROUTINE IN ABDOMINAL OPERATIONS

O. L. PELTON, SR., M.D.

ELGIN, ILL.

It is not the intention of this paper to add anything original or new, but to emphasize a few points in intra-abdominal operations. I am pleading for larger incisions and more careful explorations of the abdominal cavity as routine work, in every case where it is necessary to open the abdomen. The only contra-indications to this measure are suppurative cases, where there is danger of carrying infection to other abdominal viscera.

It has been my good fortune to live through and note what has been done almost from the beginning of intra-abdominal work. I remember well when as a student and intern in the New York hospitals that Emmet, Thomas, Peasley and many other gynecologic surgeons were endeavoring to remove fibroids and large ovarian cysts through a 2-inch opening. And less than twenty years ago Robert Morris and many other progressive eastern surgeons pointed with pride to scars an inch long on the abdomen through which they had removed an appendix. And I am sorry to say that we have some operators at the present time who are preying on the credulity of their patients by saying they can do such an operation through small openings.

One of the reasons for the small opening in days gone by was on account of ventral and postoperative hernias, but with our improved technic stitch abscesses and infected wounds are rare, and are always due to a fault in the technic or some mistake at the time of operation in non-septic cases. Another reason for the small opening was because of the esthetic sense of the patient, but the time has come when so many people have scars on their abdomens that anyone would rather have one large scar than two smaller ones. I have not forgotten the admonition of my father when a boy, "work well done was twice done," and in abdominal surgery this proves true too often.

It has been my experience to have many patients come to me, after being operated on by skilled surgeons of this country, where the clinical symptoms were not relieved by the first operation, and I have no doubt but many of my cases done in the past have had to have a secondary operation by some other surgeon and thereby bring discredit on myself and added expense, danger and pain to my patient. This was first forcibly brought to my attention by one of my own cases in which I removed a large appendix, the wound healed promptly and the patient was discharged from the hospital, but the clinical symptoms were not relieved. I had done the work through a small opening and a little later on I had to open the abdomen again and found a Meckel's diverticulum. After this second operation all clinical symptoms subsided and the patient made a good recovery.

Thirty-five years ago, in the very beginning of my practice, I was called to see a young farmer who was suffering from what was then known as perityphlitis. I had in consultation with me two of the most famous consultants of this and DeKalb County, namely, Dr. H. M. Crawford of St. Charles and Dr. Nesbit of

Sycamore. The patient vomited stercoraceous matter for four days and was given up to die. Finally the abscess broke into the bowels and he made a slow recovery. Twenty-five years later this man commenced to run down and presented all the symptoms of organic stomach trouble. He went the rounds of many stomach specialists and he was advised to have a stomach operation. He finally came to me, and knowing his previous history, though twenty-five years had elapsed, I diagnosed adhesions around the appendix. He consented to an operation. We made a large opening along the border of the rectus muscle, removed the appendix, but more than all else I found around the appendix what is now known as Lane's kink and Jacksonian membrane. The Lane's kink had drawn on the bowel so long that it was constricted to about a quarter of its normal size. At the end of three weeks after the operation this patient was back on his farm, and since that time has been in perfect health. Another case of our series that has come to us recently was a young man who had been operated on for appendicitis through an inch-and-a-half opening, low down near the crest of the ilium, but the clinical symptoms were not relieved. I made a large opening and found that he had a Lane's kink extending 6 inches up the ileum. He made a quick recovery following the operation and all symptoms were relieved.

Since that time in all my operations for appendicitis, except in those where there is suppuration, I have used large enough incisions to carefully examine the cecum and ileum for adhesive bands, and to my surprise I have found these adhesions in a vast majority of my cases. I would also call your attention to the fact that if there is one adhesion there will very likely be more, so I am never satisfied if I find one until I have searched the lower ileum for more. In doing this work I would caution you on one point: always see after breaking up or ligating these adhesions that the peritoneal surfaces are brought together.

Appendicitis has become such a frequent disease that we too often make a hasty and superficial diagnosis. When I was at Rochester two years ago Dr. W. J. Mayo told me that he found in cases that had been operated on for appendicitis and had not been relieved that the cause in his judgment was often due to an impacted stone in the ureter. Since I have started this paper Maurice H. Richardson of Boston has come forward in the last issue of the *Annals of Surgery* with another masterful paper under a different title, showing again the necessity of examining the kidney and ureter in operations for appendicitis. Only a short time ago a retired farmer came to me suffering great pain in the back and right side of the abdomen, particularly over McBurney's point. He had been operated on previously for appendicitis and the appendix was removed, but he had not improved following the operation. Every week or ten days he had paroxysms of such acute pain that he would be doubled up from twenty-four to forty-eight hours in spite of what anyone could do. Had I not known that the appendix had been removed by a good man, I presume my diagnosis would have been appendicitis, but knowing this, I looked further, and by the aid of an x-ray plate I found a stone on the right side on a level with the first lumbar vertebra. At the operation I removed the stone, which was impacted in the ureter about 2 inches below the pelvis of the kidney, and the patient has suffered none since. This case I cite to emphasize the points brought out by Mayo and Richardson that in cases operated on for appendicitis the kidney and ureter should be examined.

In women it is my judgment that all operations for chronic appendicitis should be done through a median-line incision, for it is easier to remove the appendix through the median line than it is to remove pathologic conditions in the pelvis through a McBurney incision. There is more trauma produced and more shock in making a forcible exploration of the viscera of the abdomen through a small incision than there is through an incision large enough to admit the hand, or if necessary the forearm. It is my judgment that one of the reasons we have done away with stitch abscesses and attained better closure of the wound, is by the making of a large incision and not trying to force tumors and fibroids through a small incision.

Moynihan and other stomach specialists report that in operations for organic stomach trouble they have found in 30 per cent. of the cases the entire cause of

the trouble to be in the appendix. In our operations for stomach trouble we have made incisions large enough to explore the appendix and gall-bladder in all cases for some years past.

It is hardly necessary for me to mention the necessity of exploring the gall-bladder during an operation for appendicitis, for only recently we had called to our attention the necessity of a secondary operation for gall-stones following an operation for appendicitis on one of our most famous colleagues. In my operations for gall-stones and cholecystitis I have made it a matter of routine in these cases to remove the appendix at the same time. Very often where I found extensive cholecystitis and gall-stones, I have found at the same time a highly inflamed appendix, which alone would account for the pain and suffering that the patient had endured.

It is only too easy when removing gall-stones to leave one behind in the common duct, and I must confess that after I have made this mistake in times gone by I am more than careful about this point to-day. In operating for typhoid perforations it is also easy to be satisfied after we have closed one perforation, but in this as in other conditions where there is one there may be more.

So, gentlemen, in closing, I beg to reiterate: Make incisions large enough to allow you to thoroughly examine all viscera of the abdomen unless there are contra-indications, and to make this examination a matter of routine. Let me add that if you do make it a routine measure you will find the time required is very small, and that you will save yourself embarrassment and chagrin and your patient much suffering and pain.

DIAGNOSIS OF GASTRIC ULCER *

EMMETT LEHR LEE, M.D.

AURORA, ILL.

In treating a patient with a history of some stomach trouble it is important to determine: 1. Is an ulcer of the stomach present? 2. If so, where is it located? 3. Are there any complications? 4. Is the case medical or surgical?

The first of these questions: Is there a gastric ulcer? In no line of cases do we run across such a prolonged and confusing history as in stomach cases. These are the class of cases that have run along usually for years with chronic indigestion, with seldom a diagnosis made, but all kinds of medicine prescribed with no aid to the patient, no credit to the doctor, and finally these patients become discouraged and about half starve themselves because they gradually eliminate one article of food after another and never find anything that agrees with them.

So these patients should know what is the matter with them, and if an ulcer is present they should have explained to them the dangers of the ulcer and the rationale of the treatment so as to lend sympathetic assistance to the doctor.

In the diagnosis I shall divide the means into (1) the history, (2) laboratory methods, (3) physical examination.

1. *The History*.—The history is of prime importance, and I place it first.

In taking a gastric history we cannot be content in merely getting the symptoms of the present attack, but we must delve back into former first attacks and gain a history of the first time they had trouble, and then strive to find when each new symptom appeared. Unless a patient has been cross-examined before, you will find it very tedious, much questioning and repeating of questions being necessary, as most patients have never thought of the symptoms in this new light and it is hard for them to recall their former symptoms. But with much care from an intelligent patient a good history can usually be obtained. Still, we must be careful that we do not suggest symptoms and have the patient admit them, and finally work up a symptom-complex, not of what ails the patient, but what we have had in our minds and have suggested to him.

* Most of the data in this paper was obtained from Dr. B. W. Sippy's service in Presbyterian Hospital, Chicago.

The average ulcer patient usually gives an early period in his symptoms which we can call the hyperchlorhydria period. The symptoms are of an occasional belching of sour matter or food, "water brash," as it is called, a discomfort coming on an hour or so after eating. They usually think this is due to something which they have eaten which did not agree with them, and pay no more attention to it. But soon this heart-burn, with sour eructations, gas, etc., becomes more frequent and may come on nearly every day, but not regularly. This may cause the patient to see a doctor, but usually he learns that taking a little soda or drinking milk and other bland foods will relieve him. After such an irregular history, with maybe periods of remission when he can eat everything, there will come a time when this history becomes regular and there is added a sensation of pain. In going back over a history it is always important to know just how old an ulcer is, and you can say that when the pain started the ulcer began. The history now becomes quite regular.

Pain in the Stomach.—An hour or two after eating the patient begins to have a gnawing dull pain in his stomach, with sour eructations, etc. This pain is generally described as a dull gnawing sensation, a sore feeling, a heaviness, although some claim that it is paroxysmal.

The patient awakes in the morning feeling all right and eats his breakfast, then all the way from an hour to two or three hours after eating the dull pain begins. This may last until the next meal, or he may know how to relieve it by taking soda, drinking milk, etc., or it may be relieved by vomiting. Some people learn that emptying their stomachs relieves the pain, so often induce vomiting, but if nothing is done it lasts as long as digestion is going on or until the next meal, when on a bland diet it passes away to reappear in the middle of the afternoon.

A very characteristic part of the history is the pain appearing in the middle of the night. This may be as regular as clockwork, awakening a given individual the same time every night, usually some time between midnight and 2 or 3 o'clock.

This pain is generally located in the epigastrium, but there is often one in the back between the sixth and eighth dorsal vertebræ, or to the left of the spine and between the tenth dorsal and the first lumbar vertebra.

Palpation and pressure on the epigastrium increases the pain; also posture influences it, it being less when the patient lies down and made worse by sudden movement or fatigue. Also some patients rest better on their backs, others on one side or the other. This is supposed to be due to the position of the ulcer.

Vomiting without hematemesis is common in ulcers occurring in about 70 per cent. of the cases. In an uncomplicated case it may come on immediately after eating from a hypersensitiveness of the stomach mucosa, more frequent after coarse food (a bland diet being less liable to produce it), or vomiting may come on during the height of digestion by irritation of the ulcer by the excess acid. The vomiting of blood is one of the cardinal symptoms and occurs in about one-third of the cases.

Such a history may go on for a month or two, when the symptoms all disappear and the patient thinks he is well, but just as suddenly the symptoms return and the same history is repeated. In a year one may have two or three attacks lasting two or three months, but in the meantime he will have intervals in which he is perfectly well. This periodicity of the symptoms is very definite and is very strong affirmative evidence in diagnosing a gastric ulcer.

I also wish to emphasize the point that an uncomplicated gastric ulcer has a definite picture, and unless this definite picture can be shown there are great doubts as to the diagnosis, but with such a history, even though the laboratory findings are negative, the probability of an ulcer is strong. Hence the importance of a clear definite history.

But one cannot overlook the fact that sometimes such a history cannot be obtained, gastric hemorrhage or symptoms of a perforation developing in an individual who was apparently well. But such cases are exceptional and a careful history will generally reveal some previous gastric symptoms.

2. *Laboratory Methods.*—Next to history taking the laboratory methods are important. A case comes to you for diagnosis and a history has been obtained. If in such a case occult blood can be found in the stools, the patient being on a meat free diet, then you have the diagnosis practically cinched..

So first examine the stools for blood; then second, test the motor power by giving a full meat free tray and aspirating at the end of nine hours; then, third, give a test breakfast of one and a half glasses of water and two slices of bread and aspirate at the end of one hour.

We fourthly inflate the stomach with tartaric acid and soda bicarbonate, giving the acid first and noting the effect as to the production of pain, a raw spot being irritated by the acid and causing pain. The inflated stomach can then be outlined and peristaltic waves watched for.

Having obtained our test breakfast, we next examine it. We note whether there is any intimately mixed mucus present. If no mucus, then we can rule out the class of cases which should be classed gastritis, and whose distinguishing sign is the presence of intimately mixed mucus due to inflammation of the stomach wall. True gastritis cases constitute a very small percentage of stomach cases.

Next we note whether the bread is finely divided or not. This subdivision of the bread depends mostly on the amount of free hydrochloric acid present. A very finely divided freely flowing stomach contents would ordinarily denote the presence of free hydrochloric acid. We also note by inspection whether there is blood present, whether this is bright red, streaked on mucus, etc.

Next in routine we determine the acid content. The limits of normal free hydrochloric acid expressed by the amount of $n/10$ NaOH it takes to neutralize it, is between twenty and forty. In addition to the usual test breakfast, there are enough phosphates, etc., in the bread to unite with 20 units of $n/10$ NaOH, so the total acidity is 20 plus more than the free hydrochloric acid.

Microscopic examinations would reveal the absence or presence of sarcinae, and if no free hydrochloric acid would show whether there were any Oppler-Boas bacilli. Also red cells or pus cells might be found. Next, a Weber blood test is done, and oftentimes most of our diagnosis depends on this.

If we find a high acidity with blood and a suitable history we can say for sure as to the presence of an ulcer and also whether complicated. If the acidity is lower, say in the normal limits, is it ulcer alone or has it become malignant? Here our decision must rest on the history and perhaps on the subsequent developments, as there are ulcers present in which there may not be a hyperacidity, but it may be considered established that increased values for hydrochloric acid speak for ulcer, and decrease or absence of free hydrochloric acid points to carcinoma.

Let us say now that we have made our diagnosis of a gastric ulcer; but because we have it does not mean that our laboratory efforts are over, for they have just begun. This is true, because by keeping track of the stools are we enabled to know how our case is getting along, for an ulcer properly treated will not continue to bleed and the continued presence of blood might throw a doubt as to our diagnosis.

3. *Physical Signs.*—(A) Pain on pressure. Hall, in *Amer. Jour. of Med. Sci.*, May, 1909, says: "We are inclined to place too much reliance on chemical findings and too little on results of physical examination and are making far too many diagnoses of hyperacidity when the finding by careful examination of the slightest unilateral rigidity in the epigastric region associated with local tenderness should lead us to diagnosticate ulcer instead." As a rule, pain on pressure occurs over a relatively small area directly over the seat of the ulcer. Boas claims that in one-third of the cases dorsal pain on pressure can be elicited.

(B) Presence of a tumor mass. A palpable tumor mass is always very suspicious, and to tell whether it is an old indurated ulcer, hypertrophic pylorus or whether it is malignant is hard, and our decision generally falls back on the history, the laboratory findings, the duration and course and the general condition of the patient.

2. If an ulcer is present, where is it located? I might add that a majority of ulcers are duodenal, but of the gastric ulcers the pylorus is the favored site. Four-fifths of the ulcers occur in a relatively circumscribed area of the stomach, i. e., the posterior surface, the lesser curvature and the pyloric portion.

No great reliance can be placed on the position of the pain. An ulcer on the posterior surface is said to cause dorsal pain, which also is increased with the patient on his back. The position in which the patient obtains most ease is claimed to indicate the position of the ulcer. That is, the position being least painful which prevents the gastric contents from coming in contact with the ulcer. One located at the cardia may cause pain immediately on swallowing by the mechanical irritation of the food passing over it; also in pyloric ulcers the pain comes late, two or three hours after meals.

Position of the ulcer is important, in that pyloric ulcers are most liable to produce obstruction; anterior surface ones are most dangerous from a perforation standpoint; and posterior surface ones and those on the lesser curvature to cause hemorrhage.

3. Are there any complications present? Let us first consider hemorrhage. As has been stated, lesser curvature and posterior wall ulcers are more liable to perforate a blood-vessel because of their nearness to the big vessels of the stomach. A branch of the coronary artery is most often eroded, the splenic next, etc.

The bleeding, depending on the vessel affected, may vary from a mere oozing to a fatal hemorrhage. Fifteen per cent. of those dying from hemorrhage die in the first hemorrhage; 35 per cent. in two, three or four hemorrhages occurring in twenty-four to thirty-six hours; 50 per cent. die from constant oozing.

The bleeding from ulcer in comparison to that from carcinoma differs, in that carcinomas seldom cause as profuse hemorrhage as ulcers, but is more of a steady ooze, which is not affected by diet, etc.

Perforation may occur in any part of the stomach, but 70 per cent. occur in anterior wall, 21 per cent. on lesser curvature, 9 per cent. on posterior wall. The occurrence, however, is rare. During the last three years, says Henry F. Lewis (ILLINOIS MEDICAL JOURNAL, July, 1911), there were only eleven cases recorded in the files of the history of the Cook County Hospital.

The prognosis is bad, about 50 per cent., depending on whether surgical interference is early, i. e., within twenty-four hours from the onset. The important thing is an early recognition.

Obstruction.—The stomach usually empties itself at the end of five and a half hours, and should be empty at the end of seven hours; 5 to 10 c.c. can usually be obtained after seven hours, while 50 to 100 c.c. is pathologic.

This motor insufficiency may be acute, as after anesthetics, fever, etc., or chronic, which is the usual cause. This may be from: 1, primary weakness of muscle wall (a very rare condition); or (2) pyloric obstruction, which is the usual cause.

Pyloric obstruction may be due to malignant growths or benign condition. The benign conditions are: 1, Ulcer with scar; 2, ulcer with inflammatory swelling; 3, ulcer with spasm; 4, bile-tract disease; (a) pressure on pylorus, (b) extension of inflammation; (5) congenital pyloric obstruction; (6) benign tumors; (7) disease outside causing pressure, perigastric adhesions. Signs of obstruction: 1, Motor insufficiency with its vomiting, etc.; 2, peristaltic waves; 3, continued secretion, which is usually a part of a motor or precedes it.

So if a patient has peristaltic waves, food over night with *sarcinæ*, etc., and we can from the history, age and course eradicate outside inflammation and malignancy, then we must find out whether the stenosis is an actual anatomic narrowing, as from a scar or due to spasm or inflammatory swelling.

An ulcer is usually an irritant to the pylorus, causing the muscle to squeeze down and keeping the secretion from passing through, and the retained acid contents in turn irritate the ulcer, thus establishing a sort of vicious circle. So a patient who on right treatment has pain in the night may be suffering from a continued secretion. On such patients the stomach tube should be passed when he has the pain and the acid contents removed.

This in turn removes the irritant to the pylorus and so relieves the spasm. Now, if on rest in bed, no food by mouth for four or five days and the stomach tube used when there are signs of a continued secretion, then if the pain disappears, peristalsis decreases and the continued secretion stops and the signs of obstruction are removed, then we know the obstruction was inflammatory or spasm and not an actual narrowing. All cases, after a course of medical treatment, should be tested again as to their motility.

A fourth complication is beginning malignancy. (I do not care to go into frank carcinoma, but the early cases.) Sippy says that 10 per cent. of ulcers become malignant, and an early recognition is important so that surgical interference may not be too late.

An uncomplicated ulcer when put on proper management will begin to heal and all symptoms will stop; but if a case continues to pass blood for an extended time, as shown by stool examinations, and if the pain does not stop, granting that we have controlled the acidity, then we should be on our guard. The degree of acidity points to one way or the other, but is not absolute. Over 50 per cent. have hyperacidity, i. e., above 60; 10 per cent. have hypoaecidity; 40 per cent. have normal acidity.

Presence of a tumor mass is not absolute, and diagnosis depends more on history and other findings.

Is the case medical or surgical? Positive indications for surgery: 1. Perforation. 2. Carcinoma believed to be developed and no contra-indications. 3. Actual obstruction so that patient is starving. 4. Perigastric abscess.

Relative indications: 1. Hemorrhage. 2. Perigastric adhesions. 3. Certain ulcers which are so large and the blood supply so poor that they will never heal, then may have to be excised.

Practically all other cases are medical. Under proper medical treatment 74 per cent. are cured; 22 per cent. improved; 1.6 per cent. unimproved; 2.4 per cent. die.

LIVINGSTON COUNTY

The Livingston County Medical Society held its twenty-third semi-annual meeting at the Elks' Club rooms in Pontiac, May 2. The following doctors were present: H. M. Pressler, Cullom; C. H. Barr, Dwight; T. W. Jones, Cornell; H. L. Henline, Graymont; George Dieus, Streator; W. L. Rabe, Dwight; J. R. Pennington, Chicago; B. F. Elfrink, Chenoa; J. G. Barnheiser, Forrest; F. B. Morgan, Cornell; H. M. Dally, E. H. Fitzpatrick, J. M. Mitchell, A. B. Middleton, J. D. Scouller, J. A. Marshall, J. C. Young, J. B. Baker, C. S. Johnson, F. L. Crocker, Frank Bawden, V. M. Daly and John H. Ross, Pontiac.

The election of officers resulted as follows: F. B. Morgan, president; J. D. Scouller, vice-president; John Ross, secretary-treasurer; James A. Marshall, delegate; H. M. Pressler, alternate; J. H. Mitchell, C. H. Barr and O. P. Hamilton, Board of Censors.

Dr. Middleton presented a case of cretinism nearly 2 years of age and weighing about 12 pounds; also four cases of enlarged tonsils from one family. The object of the presentation of these cases was to impress on the medical profession the advisability of having medical inspection in our schools.

Dr. Marshall read a paper on the "Examination of Stomach Contents." This subject was freely discussed by Drs. Morgan, Fitzpatrick, Dieus, Pennington and Scouller, and the discussion closed by Dr. Marshall.

Dr. Pennington read a paper on "Hemorrhoids," illustrating his subject with several charts. This subject was freely discussed.

Drs. Henline, Johnson and Bawden were elected to membership in the society.

MACOUPIN COUNTY

The Macoupin County Medical Society met at Virden, Ill., April 23, in the I. O. O. F. hall. This was the quarterly session and by far the best and largest gathering the association has had in years. There were thirty-one physicians

present from the county and prominent physicians from Springfield and St. Louis were also present. A business session was held, at which officers were elected for the ensuing year, followed by a luncheon given by local physicians. The following were the officers elected: president, Dr. T. W. Morgan, Virden; vice-president, Dr. Liston, Carlinville; secretary-treasurer, Dr. Doan, Scottville. Dr. Doan was chosen delegate to the state meeting in Springfield May 21-23, and Dr. E. G. Motley his alternate. The next meeting will be held in Gillespie in July.

Following the luncheon the society devoted several hours to the discussion of several papers that were read, notably by Dr. Crossen of St. Louis and Dr. Bassin of Virdin. Dr. Charles Patten of Springfield discussed Dr. Crossen's paper.

The following are the names of the doctors present at the luncheon and business sessions: Drs. Korrell, Shipman; Hudson and son and Crumm, Palmyra; Doan and Dalton, Scottville; King, Gross and Hobson, Gillespie; L. Corr, Matthews, Collins and Bell, Carlinville; D. A. Morgan, Nilwood; Riffey, Bullard and Simmons, Girard; Morton and Charles Patton, Springfield; Alderson, Thayer; Crossen, St. Louis. The following were the Virden physicians present: Drs. Lockwood, Morgan, E. R. and E. G. Motley and Shriver. Drs. White of Auburn, Hill and Mitchell of Girard and Benjamin Shanklin of St. Louis and J. H. Boyer of Virden were present at the afternoon session.

MADISON COUNTY

The Madison County Medical Society met at Collinsville, April 5., and considering the fact that it was held in the southern border of the county, it was well attended. The following members were present: Drs. Oliver, Smith, Oatman, Burroughs, Ferguson, Harrison, Siegel, Sims, Luster, Wadsworth, Barnsback, Pfeifferberger, Hastings, Wahl, Robinson, Hirsch, Spitze and E. W. Fiegenbaum. Visitors: Mrs. B. Harris and Miss May Mayer, registered nurses, and Mr. Harrison, medical student. Our delegate was instructed to vote against the proposition to collect A. M. A. dues in the local society, as it was feared that this movement would greatly decrease the membership. The society also went on record as supporting all of the amendments to the State Constitution and By-Laws, offered by Dr. Black, and as being opposed to the amendment offered by Dr. Zurawski of Chicago. These amendments will be up for action in the House of Delegates at our next state society meeting at Springfield. Dr. Lay G. Burroughs then read a paper on "Medical Ethics," which was a very valuable résumé of the subject. The duties that we owe to each other, to the profession and to the general public were ably outlined and attention was called to the fact that the same treatment we give to our next-door neighbor ought to be given to our professional brother under all circumstances. The relation of the doctor to public health problems was especially emphasized and our duty in this regard made very plain. It was, taken altogether, a very timely paper.

Meeting of May 3

The Madison County Medical Society met at the Illini Hotel, Alton, on the evening of May 3, in social session and first annual banquet. A magnificent feast had been prepared by the local committee on arrangements and with music and flowers, full justice was done to the good things provided. Dr. E. C. Ferguson presided over a short business session. It was ordered that flowers be sent to Dr. E. C. Lemen of Upper Alton and to Drs. Joseph Pogue and P. S. Weidman of Edwardsville, all of whom were confined to their homes by illness. Dr. E. W. Fiegenbaum was selected as toast-master, and Dr. Lay G. Burroughs delivered the address of welcome to our guests. The after-dinner speech was made by the Hon. W. P. Boynton and was well received and highly appreciated. Short talks were also given by Dr. O. J. Gwynn of Granite City, Dr. T. P. Yerkes of Upper Alton, Dr. J. M. Pfeifferberger of Alton, Dr. J. Morgan Sims of Collinsville and Dr. E. C. Spitze of Edwardsville.

Those attending the banquet were: Dr. and Mrs. W. H. C. Smith, Dr. and Mrs. Lay G. Burroughs, Dr. and Mrs. E. C. Ferguson, Dr. and Mrs. J. H. Fiegenbaum, Dr. T. P. Yerkes and daughter, Mrs. T. Thomas, Dr. and Mrs. Waldo Fisher, Dr. I. J. Beard and Miss Turner, Dr. O. J. Gwynn and Miss Caton, Dr. and Mrs. R. W. Binney, Dr. and Mrs. E. Wahl, Dr. and Mrs. H. W. Davis, Dr. and Mrs. E. W. Fiegenbaum, Dr. W. W. Everett and daughters, the Misses Everett and Mrs. A. E. Clement, Dr. and Mrs. Charles R. Kiser, Dr. and Mrs. George E. Wilkinson, Dr. and Mrs. Ralph B. Scott, Dr. L. L. Yerkes and Miss Didlake, Dr. and Mrs. E. A. Cook, Dr. and Mrs. J. B. Hastings, Hon. W. P. Boynton, Dr. J. M. Pfeiffenberger, Dr. J. H. Siegel, Dr. E. C. Spitze, Dr. F. C. Johnson, Dr. G. Taphorn and Dr. J. Morgan Sims.

Taken altogether it was a highly successful affair and it was unanimously agreed to make the social session and banquet an annual feature.

E. W. FIEGENBAUM, Secretary.

MOULTRIE COUNTY

The Moultrie County Medical Society met in the grand jury room in the courthouse at Sullivan, Ill., April 23, 1912, a large number of physicians being present. Dr. G. B. Kessler, president of the society presided. Dr. W. K. Newcomb of Campaign was the principal speaker of the meeting, his talk being followed by the clinics. The annual election of officers resulted as follows: Dr. S. L. Stevens, Dalton City, president; Dr. W. P. Davidson, Sullivan, secretary and treasurer; Dr. J. H. Vadakin, Bethany, Dr. J. F. Lawson and Dr. R. B. Mille, Sullivan, censors. Dr. W. P. Davidson was chosen as delegate to the state meeting to be held at Springfield, and Dr. J. F. Lawson his alternate.

OGLE COUNTY

The Ogle County Medical Society met in the Court House in Oregon, Wednesday afternoon, April 17. The weather was very unfavorable and the attendance was very light. There were present Drs. Beard and Griffen of Polo, Dr. Hedberg of Leaf River, Dr. Murphy of Dixon and Drs. Sheets and Beveridge of Oregon.

Dr. Hedberg was received as a member of the society by certificate from the Chicago Medical Society. Dr. Milton H. Mack gave a very interesting and instructive talk on the subject of "Hyperchlorhydria," with some new ideas of treatment, followed by a general discussion by all present. Dr. J. M. Beveridge presented a paper on the somewhat unusual subject of "Survival of Superstition as Found in the Practice of Medicine." After discussion the society adjourned to meet in Polo, July 17.

J. M. BEVERIDGE, Secretary Pro. Tem.

MEDICAL ETHICS

L. G. BURROUGHS, M.D.

COLLINSVILLE, ILL.

In presenting this subject, I do so with a feeling of sincerity toward my colleagues and the profession as a unit. In approaching a subject-matter of this kind one finds himself dealing with the moral rights and the public liberties of his bosom friend and fellow-man, and I have no intention in any way to formulate or frame up any set of regulations, rules or by-laws to govern any man, nor will I presume to enter into the unknown and try to unfold what the future has planted in her educational soil, but with your consent I will in my humble way endeavor to call to mind some old-forgotten principles which from time to time have not found an avenue of entry into our every-day routine of business.

Every secret society, order or lodge has for its protection and promotion framed up a so-called set of by-laws, to which every candidate for admission must on oath subscribe and solemnly pledge his honor to support, so long as it does not interfere with his personal rights, pledging himself to uphold and support his fellow-member.

So likewise has the American Medical Association, for the protection and support of its members, adopted a code of principles, known as ethics, which has for its purpose four fundamental principles.

1. The duty of the physician to his patient.
2. The duty of one physician toward another.
3. The duty of a physician to his profession.
4. The duty of a physician toward public health.

In reference to the duty of a physician to his patient, let me say that I believe that it is the duty of every physician to obey the calls of the sick and injured, to be mindful of the character of his mission and the responsibilities which he incurs in the discharge of his momentous duty. He should remember that the comfort, health and lives of those entrusted to his charge depend on his skill, fidelity and attention. By uniting tenderness and cheerfulness he will inspire all sufferers with gratitude, respect and confidence. Remember also that secrecy and delicacy should be strictly observed, and the familiar and confidential intercourse to which physicians are admitted in their professional visits are to be guarded with the most scrupulous fidelity and honor and kept sacred forever, and should never be divulged by the physician except when required by the mandates of the law.

Last but not least, the physician has a right also to expect of his patient a remuneration for services rendered. This, then, brings us face to face with the problems that come before us in every-day life.

The idea seems to prevail in the minds of some people that physicians are compelled to answer every demand made on them by suffering humanity. This, however, I am not willing to concede, for there is no law of the land to compel any man to work for naught. The courts of this land, in the administration of justice, provide ways and means for the defense of a criminal who is not able to defend himself; so likewise has the medical profession made provisions for the care of those who are not so well provided for. Knowing this fact, I feel relieved of this obligation, but I do feel that we should, from a sense of humanity, respond to a call of our sick brother, if time permits us, and at that time do whatever is necessary for his relief and comfort; and if we feel assured that he cannot remunerate us for our time, it is optional with us whether to hold the patient or refer him to the county physician, whose duty it is to see that he is properly cared for. Failure on his part to perform such service makes him unworthy of the trust committed to his charge.

Our code repeatedly calls attention to our obligation to perform gratuitous services in certain cases, and to avoid always the suspicion of being actuated by mercenary motives. Can such suggestions be found in any other codes of business? Does the railroad transfer its passengers gratuitously? Does the merchant in your community supply his customers free of charge? Then, why should so much be expected of us?

The object of the profession is not to monopolize, nor to enhance the value of our services. Such an insinuation is false and only worthy of those outside of the profession.

I desire now to call your attention to the duty of physicians toward each other. Every physician entering the profession and becoming entitled to full professional fellowship incurs an obligation to uphold its dignity and honor, to exalt its standing and to extend the bounds of its usefulness. Medicine being a liberal profession, those admitted to its ranks should found their expectations of practice on the character and extent of their medical education. Pardon me for referring to the standing of the curriculum of medical institutions of to-day. You will all agree that medical education has made rapid progress, consequently the physician of to-day may presume that he is better equipped than his old colleagues of years past. Ah, but that is a mistake, for those who are our seniors have learned by their years of experience and practice what we of to-day have yet to learn.

It has been said from time to time that there is more rivalry and jealousy between doctors than in any other profession, and this, although embarrassing, is, in a measure, true nevertheless. If we admit the truth, there must be a cause and it behooves us as a body and individually to strive to effect a cure for this evil and work in harmony. These petty feelings arise sometimes and grow to anger over some little act of injustice on the part of our colleague.

Competition has become so great, and the community is so filled with a class of charlatans having little regard for the profession and less for themselves, who by the aid of the press succeed in inducing so many people to receive their worthless treatment, that as the young doctor launches into the field of practice he finds it difficult to gain a foothold and establish himself. But I believe, after all, if he is possessed with the true attributes of a moral character and is qualified to meet the occasion, opportunities will knock at his door. But before he assumes to enter into the vineyard he should have some criterion to follow, and I know of nothing superior to the old proverb, "Do unto others as you would have others do unto you," keeping in mind the highest regard and esteem for our seniors, for it is undoubtedly true that age brings with it many advantages of mental discipline and experience. So let us then, my young colleagues, be humble and meek in our criticism. Physicians in practice should have the same regard for one another as you would have for your neighbor who lives next door, always ready to lend assistance and kindness, rather than enmity.

The prevailing tendency for one physician to treat and take charge of a patient in charge of another physician is indeed deplorable, for it is considered unethical for a physician to prescribe for, treat, or take charge of a patient of another physician, in the same illness, except in case of an emergency or in consultation with the former physician, or when the former has relinquished the case or been dismissed in due form. Physicians treating difficult cases, when doubts arise, should encourage consultation, and during such consultation, no insincerity, rivalry, or envy should be indulged in; candor, probity and all due respect should be observed toward the physician in charge of the case, and the consulting physician should observe the most honorable and scrupulous regard for the character and standing of the attending physician.

To improve the general morals of the profession, as applied to character, conduct and the courtesies of life will indirectly and directly secure for ourselves public respect, and advance the interests of the science of medicine.

Doctors should remember that patients have a right, if at any time they feel dissatisfied with the services received, to select others, but first I would insist on being paid for services already rendered, and the second physician, before assuming charge of the case, should ascertain if the request of the former for payment has been satisfied. I lay particular stress on this for as a rule we all find a class of patients who are always ready to find fault, always dissatisfied and always changing from one doctor to the other, never paying any one, and the doctors who encourage such practice will do so to their own sorrow. In this connection let me say that I look with disgust on the man who tries to make a show, and get before the footlights by the aid of printer's ink.

Concerning the duties toward his profession, I believe that every physician should identify himself with the organized body of his profession in the community in which he resides, and in so far as he is able, to attend all meetings, to cultivate fellowship, exchange professional experiences and to promote the interests of the profession.

In respect to the duty of physicians toward the public and the health of the community at large, which we are expected to protect, we should at all times be ready to cooperate with the proper authorities in their administration, to enlighten the public of the necessity of strict quarantine regulations when epidemics of contagious diseases are prevalent, and thereby becoming useful and good citizens.

So, in conclusion let me say that I feel earnestly on this subject and trust that nothing I have said indicates acerbity or illiberality on my part. Among those who may differ from me are my personal friends for whose opinions, in most

matters, I entertain the highest respect; it would indeed be painful therefore for me to know that I have said anything which would wound or forfeit their friendship and esteem.

Men, I speak not from sentiment but in and for the interest of our profession. I plead for harmony and peace.

SURVIVAL OF SUPERSTITION AS FOUND IN THE PRACTICE OF MEDICINE

J. M. BEVERIDGE, M.D.

OREGON, ILL.

Primarily superstition must be recognized as a relative term. While we or any group of representative people might agree on a definition, we would differ widely on the application of the term superstition. It may be variously defined, as "excessive reverence for or fear of that which is unknown or mysterious." One more difficult, "the attitude of mind of a person or persons whose belief is regarded as false and as leading to idle and foolish practices, especially beliefs regarded as irrational and misleading." Two shorter definitions are "a fixed belief without reason" and "a groundless belief in supernatural agencies."

The abiding faith of the christian may be superstition to the skeptic. Paul at Mars Hill, telling the cultured Greeks that "they are in all things too superstitious" was in turn derided when he told of his doctrine of the resurrection. What we to-day call superstition may have been the sound faith of our fathers.

We are now fairly well informed of the controlling laws of many things which, only a few years ago, were regarded as the direct visitation of an offended Providence.

I remember, when a boy, of asking a physician the cause of cerebrospinal meningitis, and of the pitying glance he gave me as he asked "what caused any disease." No one present apparently had any idea that the disease had a definite specific cause, or that it was in any way preventable.

Present-day medicine is an evolution rather than a creation. As among primitive peoples there was the belief that but for external causes man would be immortal, and that death was always due to some tangible enemy, so in the instinctive love of life and the desire for protection was the inception of the practice of medicine. Out of complete ignorance, universal superstition, burdened with the myths and traditions of the old pantheism, this desire for earthly immortality has evolved our noble profession. While medicine is one of the greatest elements of civilization it has never led or kept pace with civilization, but rather followed after. To-day nearly all of the old belief of witchcraft, of charms and amulets, of the evil eye, of magic words and incantations is connected with the cause and cure of disease. In some languages the words "medicine" and "mystery" are derived from the same root and are very similar in meaning. Primarily all disease was referred to some deity or demon, and the early practice of medicine was in the hands of the priesthood. Treatment was usually by prayer, sacrifice, incantation and wearing of charms and amulets. This theory of disease and treatment still exists, as we could find people in Ogle County who tell us that what we call disease is only error and would recommend prayer, incantation or absent treatment. We might even find someone who carried a buckeye to ward off rheumatism.

The first physicians of whom we have any account were the Egyptian embalmers, who seem to have not been very popular as they were often stoned after performing their duties. This established a bad precedent, the spirit of which has never disappeared. Both Egyptians and Chaldeans often exposed their sick in public places so that they might have the benefit of the experience of all who had similar disorders. Another precedent was established of telling all your troubles to the sick, which unfortunately has never disappeared. The most rational idea that has come from the Egyptians was that all who recovered were compelled to go to the temples and record their symptoms and what was supposed to have

cured them, thus furnishing some data for a rational system, but as no records appear to have been kept of those that died, the data must have been incomplete and misleading.

Chinese medicine from the earliest days down to the coming of the medical missionaries was a horrible mixture of ignorance, cruelty, superstition and disgusting materia medica, with no rational basis whatever, and from them we have received practically nothing of value. From the Hebrews we have laws of hygiene concerning their every-day life, as to preparation of food, care of the dead, treatment of some contagious diseases, regulation of marriage, that could hardly be excelled at the present time; but in the study of disease and treatment they appear to have made but very little progress.

Hippocrates, who flourished in Greece about 400 B. C., appears to be the first who recognized the dignity and nobility of the calling of the physician. The lofty ideals of the "oath of Hippocrates" may well be taken as rules of conduct by the physician of to-day. His observations were so keen, and his deduction so accurate as to be valuable to-day after a lapse of 2,000 years. Having but little knowledge of anatomy and physiology his treatment was necessarily empirical, but his methods were of the true scientist. He appears to have been the first to refer diseases to their efficient causes, rather than to some offended deity or demon, and to him may be ascribed the beginning of the liberation of the practice of medicine from universal superstition. In all he well deserves the name of "the father of rational medicine."

During the next 1,000 years the progress of medicine was slow, and always hampered by the prevailing superstitions. During the middle ages the only progress worthy of mention was by the Arabians. Following the decline of paganism and the establishment of christianity, medicine retrograded rather than advanced, as all the learning of the times tended to religious discussions and controversies, and the study of anatomy was forbidden by the influence of the church.

It was not till the early part of the seventeenth century that there was much serious investigation along truly scientific lines by medical men. Then Harvey discovered the circulation of the blood, then the use of peruvian bark for malaria was introduced into Europe, then were begun the experiments of the action of drugs on living animals, thus beginning a rational method of treatment. But at this same time we find learned scholars gravely asserting their belief in witchcraft and demonic possession, and epidemics were considered as evidence of divine displeasure, rather than of faulty hygiene.

It was during these years, in the grave puritan town of Salem, Mass., that there were a large number of legal executions of persons convicted of witchcraft. Later when Dr. Jenner introduced the method of prevention of small-pox by vaccination there was violent opposition by well-meaning people, who asserted that he was interfering with a divine prerogative. When Sir James Simpson discovered the anesthetic properties of chloroform and applied it to obstetrics, he had to withstand the violent attacks of clergymen who said that he was interfering with the primeval curse, "in sorrow thou shalt bring forth children." His reply was so easy and so apt that it is surprising that they had not anticipated it.

But the progress has been steady. More and more the mists have cleared away; efficient causes of diseases have been made clear; a better understanding of anatomy, physiology and pathology has opened the way to a more rational treatment. Since the perfection of the microscope, progress has been by leaps and bounds, so much has been accomplished that almost no problem appears too difficult to undertake, and never were faith and hope for the future as bright as to-day.

But is this bright light of reason universal? Have intolerance and superstition disappeared from the learned and to be found only among the illiterate and ignorant? Have we still among us any who would put the brake on the wheels of progress? We have all over this country a pseudochristian organization called Christian Scientists, so called as some one says for the same reason that guinea-pigs have their name, "because they are not pigs and do not come from Guinea."

There has been a bill before Congress to establish a national health bureau, and there is an organization called the National League for Medical Freedom in which we find the Christian Scientists banded with the worst advertising quacks and the manufacturers of the most fraudulent patent medicine to defeat the passage of this bill. What do we understand by Christian Science? The writings of the great teacher of this cult are so obscure that it is often difficult to grasp the meaning if any were intended. Some quotations from her book may be given:

"It is not scientific to examine the body to determine or ascertain if we are in health."

"Disease is less than mind and mind can control it."

"Realize that the evidence of your senses is *not* to be accepted in cases of sickness."

"The only effect produced by medicine is dependent on mental action."

They are irrational in that they claim that medicine can have no effect but by mental action, but they recognize that in toxic doses medicine can and will kill with or without mental action. The Christian Scientist also believes in what he calls "malicious animal magnetism," that is, that one person with evil intentions may inflict severe and dangerous injury on another, even at a distance, solely by mental means. This is only a recurrence of the old belief in the evil eye for which witches were burned 300 years ago. And strange to say, a case was recently brought into court by one of this cult in which he was pleading that he had suffered severe injury and harm by this malicious animal magnetism. It seems a strange coincidence and something of the irony of justice that this suit was brought in Salem, Mass., where the witches were executed in the seventeenth century.

Christian Science is not a true science in that it is not founded on systematized facts but on a sweeping assumption, and an assumption contrary to the universal belief and experience, and the accumulated facts of the ages. To return to our primary definitions: Christian Science is a fixed belief without reason; it is a groundless belief in supernatural agencies. It is a rank superstition.

To come nearer home let us consider some of our own home superstitions. During the first year of my practice a grandmother told me that she had a reliable remedy for "after-pains." Go into the hog yard, take part of the trough where the board is worn smooth by the hogs rubbing on it, make a tea of the chips, and you will have a specific for "after-pains." If you have a case of measles with delayed eruption, I have been told that "nanny-berry tea" will be of great assistance. If anyone wishes to know where the nanny berries can be secured, I would say that they can be found in any sheep yard. I cannot vouch for either of these prescriptions as I have never given them a fair trial. A young man told me that he had tried everything but one for heart burn, and he would try that as it had cured his father. Take three live earth worms, wrap them in a plantain leaf and swallow them entire.

I once told a family that a child had stomatitis, commonly called thrush. A few days later the father told me that as soon as he knew what the trouble was he knew what to do. He went to the river and got a live minnow and put that in the child's mouth which resulted in a speedy cure. He assured me that a small frog would do as well but that it must be living and must not be cleansed as the river slime was the active agent.

I think I have not had a case of erysipelas for years without some wise neighbor coming in and insisting that they get a "string doctor." The string doctor, I think, passes a cord over the eruption, says a few magic words, and then the cord must be burned by a slow, smouldering fire. A few months ago I had a case where I afterward learned that I had the assistance of a string doctor and also of an earnest disciple of Mrs. Eddy, and nevertheless the case recovered in just the usual time for this self-limited disease. I was called to see a baby whose grandmother said had the "go backs," and insisted that they take it to a wise woman in Polo who would powwow over it and effect a speedy cure.

I have been told that if I would nail a lock of my hair to a tree, cut off the lock and leave it there I would never have asthma again. I have neglected to take this treatment and so occasionally have asthma. While assisting another physician in a difficult case of obstetrics, the mother requested that a piece of the placenta be preserved as a neighbor wanted it to remove a birth mark from her child. I have been asked what was the proper time of the moon to wean a baby, and on this as many other times have been compelled to confess my ignorance. I have seen people badly worried because a patient seemed to improve on Sunday, and I had a teacher in a normal school assure me that she was not in the least superstitious but that she would not permit her mother to have an operation on Friday. I have frequently been asked if a child was livergrown. I cannot give you the etiology, pathology or symptoms of this disorder, but I can give you the treatment as it was given to me: Take the child by the left leg and pass it three times round the leg of a table.

A young doctor in southern Indiana came near being mobbed because he trimmed the nails of a patient with pneumonia. The natives expected nothing but a fatal issue after this treatment. A physician from Minnesota writes me that a woman in his town would not have an operation on her child till the sign of the zodiac pointed to the particular part requiring the operation. Also that the old ladies of his precinct believe that if the umbilical cord is dressed pointing to the northwest, the child will never have colic. A doctor from Missouri writes that a physician in his town believes that wounds inflicted on fish days will inflame less than any other time. The same doctor always consults the zodiac before doing any surgical work, and then does it only on fish days unless an emergency. I knew a doctor who kept a record of the signs of the zodiac in which his obstetrical cases occurred in order to determine the effect of the sign on the later life. This belief that the body is controlled by the signs of the zodiac is in full accord with the belief of the middle ages. I suppose that everyone here could give some infallible cure for warts learned in childhood. Around snakes, spiders and toads are innumerable superstitions. You will find them in the witch scene in Shakespeare's *Macbeth*. We have all seen asafetida hung round children's necks to keep off contagious diseases. There is probably no one here who could not furnish additional proof of the tenacity with which we hold to the old heathen superstitions.

Now what is the object of this paper? What is the moral I would draw from this phase of medical history and this collection of absurdities? It is this: I would make a plea for more rational medicine. Let us remember that the workings of all Nature are by law fixed, and for all practical purposes immovable. Often the law is imperfectly understood, sometimes the underlying principles have not been determined, but the law is there even as the lawgiver is there. Let us remember that disease is only Nature working through law; that there is always some definite cause, perhaps not understood, often unknown, it may be a micro-organism, a chemical irritant, a lack of proper nourishment of the part affected, some tissue or organ subjected to a strain beyond what it is able to bear, and Nature is exacting the penalty for broken law. But still more do I wish to emphasize that in treatment we should be rational. Let us in every case have a reason for the faith that is in us. A few years ago there was among the physicians of this country, and especially the surgeons, an epidemic of therapeutic nihilism. This may be traced to two causes, possibly more. At that time in our schools surgery was exalted and *materia medica* and therapeutics neglected. Consequently many of us came out well qualified to tell how to perform a hysterectomy by the various methods, but knowing very little of what to do for a case of nervous indigestion, how to differentiate the various headaches for treatment, and many other simpler things of which we see fifty to one of indicated hysterectomy. Another reason for this nihilism is that our markets have been and are flooded with inferior and dishonest drugs, from which it is impossible to get the full physiologic action. Let our therapeutic measures, whether by surgery, drugs, baths, treatments, diet or exercises be with reason, to fill some definite indication, not because they are used in this or that disease. Let us not use a prescription

with a dozen ingredients in the hope that some one of them will reach the case. But to illustrate: If we wish to use aconite in pneumonia, use it when it is indicated, use it to fill that indication and no more. If we wish to use strychnin in the same disease, let us wait till it is needed, then use it, but never because it is recommended in pneumonia. Further, always strive to have a reliable preparation, so that the dosage may be accurate and definite results obtained. A little experimentation will convince you as it has me that often the goods of one manufacturer will require twice the dose of another, and that many are absolutely inert. I think it is well to be very cautious in the use of any preparation of which we do not know the full physiologic action, no matter how well recommended for any disease. Let our reasons ever be faithful, and when dealing with things unknown, of which there are many in medicine where we must proceed on faith, let our faith be reasonable. With this reasonable faith and this faithful reason, the evolution of medicine will dissipate the few remaining clouds of heathen superstitions, and the practice of medicine will emerge as a pure science.

ST. CLAIR COUNTY

A very interesting and instructive meeting of the St. Clair County Medical Society was held at the St. Clair Country Club April 24, the occasion for the meeting being the "official visit" of Dr. W. K. Newcomb, president of the Illinois State Medical Society.

The address of President Newcomb was not on the usual topics of discussion in medical societies, but was none the less interesting and instructive. First the necessity for the doctor making provision during his earlier years for the time, certain to come to all of us, when we can no longer provide for ourselves and families was demonstrated, and the fact that a competence can seldom be acquired through the practice of medicine was made clear, thus showing conclusively that a doctor should supplement his professional work by some speculative or investment business. Next the unfairness of the present laws relating to the practice of medicine in the various states, and the especial features of the Owen bill, which especially excludes the possibility of any regulation of the practice question by the Federal government, was criticized. The speaker also deplored the great disadvantages to which the older doctors are subjected when a change of location from one state to another may become necessary, and dwelt on the fact that while a doctor may be well qualified to practice his profession he may still be lacking in some of the more recent features of the modern medical education, and hence unable to pass the required examination in the place of his choice, and thus unable to locate in the place where he might for various reasons wish to live. The varying quarantine regulations in the several states was also made the subject of criticism, and some dissatisfaction with the terms of the Owen bill expressed in strong terms because of the fact that it actually inhibits the Federal power being exercised in the states without the full consent of the local boards of health.*

At the conclusion of Dr. Newcomb's address a committee consisting of Drs. Lillie, Fairbrother and Wiggins was appointed to draft resolutions approving the Owen bill, and to forward copies of such resolutions to our senators and to the representative from this district in Congress.

The following preamble and resolutions were therefore adopted:

WHEREAS, The St. Clair County Medical Society, comprising nine-tenths of the physicians of the county, firmly believes that the establishment of a national Department of Health and Sanitation will tend to the promotion of health, and therefore to the general welfare of the people of the entire country; and

WHEREAS, The bill now before Congress, and known as the Owen bill, appears to be suitable for the object sought, therefore,

* In the general discussion that followed Dr. Newcomb's remarks, the Owen bill was approved in so far as it is a step in the right direction.

Resolved, That this society heartily approves the Owen bill and recommends that it become a law.

Resolved, That we submit a copy of these resolutions to our senators in Congress from this state, and to the representative from this district, the Hon. W. A. Rodenberg, and urge them to give the Owen bill their earnest support.

Those in attendance at this meeting were: Dr. F. E. Auten, president; Dr. B. H. Portuondo, secretary; Dr. A. E. Hansing, treasurer; and Drs. Dewey, Huggins, Wiggins, Moeller, John Gunn, Eisele, McQuillan, Starkel, Fairbrother, Lillie, Lane, J. W. Twitchell, Evans, Campbell, Raab, Rives, Nolan, Reuss, Arbuckle, and Dr. T. Van Boyd, guest of the society.

The next meeting of the society will be held on the first Thursday in July and will probably be both scientific and social, ladies being invited and some form of entertainment provided, a custom formerly so popular with this society, but latterly fallen into "innocuous desuetude." Announcement will be made in June of whatever plan is adopted.

B. H. PORTUONDO, Secretary.

WARREN COUNTY

At the semi-annual meeting of the Warren County Medical Society, held at the Monmouth College Science Hall, Monmouth, Friday, April 5, the following officers were elected: president, William H. Wells of Monmouth; vice-president, J. M. McClanahan, Kirkwood; secretary and treasurer, Harold M. Camp of Monmouth.

A scientific program was given, those participating being Drs. R. H. Babcock and E. C. Rosenow of Chicago, and Chauncey Sherrick of Monmouth.

There were about fifty-five physicians present, many of whom came from adjoining cities, including a large delegation from Galesburg. A detailed report of the meeting will be given at a later date.

WHITE COUNTY

There was a meeting of the White County Medical Association, May 2, at 4 p. m., at the offices of Drs. Lehman and Niess, Carmi, Ill. The following officers were elected for 1912: president, F. J. Leslie, Maunie; vice-president, James Eddington, Enfield; secretary and treasurer, J. Niess, Carmi; Dr. F. C. Sibley was elected delegate to the state meeting at Springfield, May 21-23; Dr. J. Niess was elected as alternate. The society admitted the following new members: Dr. R. L. Eddington, Springerton, and Dr. H. B. Martin of Grayville. Meeting adjourned to meet at call of secretary.

J. NIESS, Secretary.

WINNEBAGO COUNTY

The Winnebago County Medical Society recently held a remarkable meeting in that it was devoted to a memorial and tribute on the part of that organization to the past and present army medical officers who are now, or have been connected with the profession of Winnebago County. It was held May 14 at Rockford when the following program was carried out.

Invocation, Captain N. B. Clinch, Chaplain 3d Infantry I. N. G.; Song, Loyal Quartet, Mrs. G. M. Needham, Mrs. Chester McFarland, Mr. C. G. Rogers, Mr. Henry Andrews. Business: Reading of the Minutes. Song: Loyal Quartet. Address, "Duties, Achievements and Sacrifices of the Army Medical Officers," Major Samuel Cecil Stanton, M.D., Medical Corps, I. N. G. Song: Loyal Quartet. Closing Prayer, Chaplain, G. L. Nevius Post, No. 1 G. A. R.

COMMITTEE

President, C. Helm, M.D., formerly Major 92nd Illinois Volunteer Infantry.
Vice-president, H. Richings, M.D., formerly A. A. Surgeon U. S. A., Lt. Col. I. N. G., retired.

Secretary, R. C. Bourland, M.D., Major Medical Corps, I. N. G.

Wm. H. Fitch, M.D., formerly 40th Wisconsin Vol. Infantry.

E. J. Clark, M.D., formerly A. A. S., U. S. A., Surgeon Nevius Post No. 1,
G. A. R.

E. Lofgren, M.D., Hospital Corps U. S. A.

H. B. Dunn, M.D., Sergt., Co. K., 12th Inf. U. S. A.

G. P. Gill, M.D., 1st Lt. M. R. C., U. S. A.

OFFICERS

President, D. Lichty, M.D., formerly 162nd O. V. I., Past Surgeon, Post No. 1,
G. A. R.

Vice-president, Anna Weld, M.D.

Secretary, Frank W. Hanford, M.D., formerly Sergt. Medical Corps, U. S. A.

CENSORS

Horace M. Starkey, M.D., Chairman.

D. B. Penniman, M.D., Argyle, Illinois.

W. E. Park, M.D.

NEWS OF THE STATE

PERSONAL

Dr. J. H. Rice, Quincy, has returned from Europe.

Dr. George Mikkelsen, Chicago, has sailed for Europe.

Dr. Frank Billings, Chicago, has started for Europe.

Dr. Frank C. Bawden of Atlanta has moved to Pontiac.

Dr. W. O. Bradley was elected mayor of Galesburg, May 7.

Dr. Harland, late of Mansfield, is now located at Mahomet.

Dr. A. L. Mann has been appointed city physician of Elgin.

Dr. S. W. Shurtz of Champaign has gone to Hawarden, Canada.

Dr. W. B. Arnold, Rockford, is reported to be seriously ill at his home.

Dr. and Mrs. Frank W. Lynch, Chicago, have returned from Europe.

Dr. and Mrs. Fenton B. Turk, Chicago, have returned from abroad.

Dr. Jacob Frank, Chicago, has returned from a tour of South America.

Dr. Curry of Streator started, May 2, for an extended course of study in Europe.

Dr. A. B. Middleton has returned to Pontiac after spending the winter in Florida.

Dr. S. M. Barnes of Fairbury, who has been sick for several months, is rapidly recovering.

Dr. W. J. Marney, formerly of Granite City, is now permanently located at Hiteman, Iowa.

Dr. B. F. Johnson of Pontiac died in Chicago, Friday, April 26, after an operation for gall-stones.

Dr. George J. Spencer, city physician of Chicago, is ill with pneumonia at St. Ann's Hospital.

Dr. Liston H. Montgomery was elected secretary of the Ohio Society of Chicago at its meeting, May 4.

Dr. E. P. Murdock, Chicago, was seriously injured in a collision between his buggy and an electric car.

Dr. Emil Beck, Chicago, was the guest of honor at a dinner given by the Detroit Academy of Medicine, May 14.

Dr. and Mrs. W. A. Haskell of Alton are home again after having spent the winter in Panama and the West Indies.

Dr. W. S. Howell, Winnebago, has suffered a nervous breakdown and is under treatment at a sanatorium at Rockford.

Dr. G. F. Johnson, East Moline, has disposed of his practice and will retire for a year. Dr. E. Don Taylor, Moline, will succeed him.

Dr. D. D. Kirby, Canton, will sail for Germany immediately after the meeting of the American Medical Association at Atlantic City.

Dr. W. H. Smith, Godfrey, who has been seriously ill with septicemia due to an operation wound, is reported to be securely convalescent.

NEWS

—Dr. Charles H. Parker of Chicago has removed to Santa Cruz, Cal.

—Drs. Charles B. and A. A. Saunders of 1919 LaSalle Avenue, Chicago, will spend the month of June in the Ozark Mountains.

—Dr. W. R. Parker of Dixon has been appointed district surgeon for the Illinois Central Railroad in place of the late Dr. Abraham F. Miller.

—Dr. A. F. Doermann of 1407 Milwaukee Avenue, Chicago, has removed to 1616 Sherman Street, Evanston.

—The John Crerar Library, Chicago, has purchased land at the north-west corner of North Michigan Avenue and East Randolph Street to be used as a site for its new home.

—A movement has been started by physicians of Madison County to recover and replace a headstone placed at the grave of Dr. Reuben Mack, the first physician to locate in Madison County, who died in 1832.

—On April 29, St. John's Hospital, Springfield, ceased to have a regular medical staff, but became an open hospital to which all regular practitioners will be admitted. The medical staff of the hospital voluntarily resigned, April 27, in order to bring about this new condition of affairs.

—At a meeting held May 7 it was decided to establish a new private hospital near Chicago for the exclusive treatment of border-line insanity cases, and a cottage on a farm near the city for the use of convalescent insane patients. The cottage and hospital are to be erected and maintained by the Illinois Society of Mental Hygiene.

—Representatives of the Chicago delegation to the Illinois State Medical Society convention, numbering about one-third of the House of Delegates, called on Governor Deneen at the executive office May 23 and urged on the Governor the retention of Dr. George W. Webster of Chicago as president of the State Board of Health. After years of service, Dr. Webster last October tendered his resignation to the Governor, at the time he learned the latter was contemplating a reorganization of the board. The reorganization has never taken place and the resignation of Dr. Webster has never been acted on. The Chicago delegates are anxious to have him retained at the head of the board. Governor Deneen did not indicate to the Chicago delegation what action he would take in the matter.—*Illinois State Register*, May 24, 1912.

ACTION OF THE ILLINOIS STATE DENTAL SOCIETY.—WHEREAS, The Illinois State Dental Society has since its organization as a special branch of the medical profession always stood for a high standard of education among its members, and

WHEREAS, It is vitally interested in a high standard in the medical colleges of this state, and

WHEREAS, The surrounding states almost without exception have seen fit to criticize the condition of medical education and state control in Illinois, and

WHEREAS, The reorganization of the State Board of Health would be the starting point for bringing Illinois into the preeminence it formerly enjoyed and deserves now to occupy, therefore be it

Resolved, That we sympathize with the efforts which are now being made by many members of the medical profession and urge that immediate action be taken by the governor of our state in this important matter, and be it further

Resolved, That a copy of these resolutions be forwarded to the secretary of the Illinois State Medical Society, and to His Excellency, Governor Charles S. Deneen.

NEW INCORPORATIONS

National Pathological Laboratory, Chicago; capital \$2,500; operate chemical and pathologic laboratories; incorporators, Robert Shaw, Anthony Starek, H. S. Warren.

PUBLIC HEALTH

—Several hundred patent medicines that are enjoying a wide sale will have their distribution prohibited or restricted if the Richardson amendment to the pure food and drug act, now being considered by the house committee on interstate and foreign commerce, becomes a law.

"Soothing sirups," diphtheria "cures," headache "remedies" and other panaceas containing cocaine, morphin and other dangerous drugs; cancer "cures" alleged to be infallible and consisting of water and alcohol, "fat reducing" creams, made of soap and water and "guaranteed to remove a pound of fat a day," and all other preparations indulging in fabulous and erroneous statements as to their curative powers will not be permitted to be shipped in interstate commerce.

—The Chicago Department of Health has been requested to send its *Bulletin* to 19,000 employees of the Illinois Steel Company. This is several times the present total circulation of the *Bulletin*, which is sent to all physicians and principals of schools in the city and to sanitarians all over the world. The style and contents of the *Bulletin* have been copied by numerous health departments, and the posters and models designed by Dr. C. St. Clair Drake of the department to illustrate the dangers of lack of ventilation and the great mortality of infants have been duplicated by several state boards of health and used as permanent exhibits. In two states they form the principal features of exhibits sent throughout the states in railroad coaches specially fitted up for the purpose.

—The births in Chicago, estimated by adding the total infants under 1 year of age enumerated by the U. S. census and the deaths under 1 year for twelve months preceding the census show a decrease of less than one birth per 1,000 population, as compared with the figures based on the census of 1900. Just which elements of our cosmopolitan population are keeping up the rate in the face of the general unpopularity of Roosevelt's advice on this subject will form the subject of extensive studies at an early date. The death-rate of infants under 1 year of age per 1,000 living at that age shows a decided drop during the same period. Whether the

decreased death and birth rates have any essential relation and whether the decreased "quantity" is an indication of improved "quality" are questions demanding careful consideration.

—Abstract from the address of President L. W. Littig before the Iowa State Medical Society at Burlington, Iowa, May 8-10:

"In states which have within their border weak and struggling medical schools, the profession has confronting it an unusually difficult problem, since the examinations are sure to be tempered to meet the ability of the home school. Deplorable, indeed, is the condition in a state in which there are many commercial schools of the lowest type, and in which the state board is controlled wholly or in part by these schools.

"This condition seems to exist in one great commonwealth, and it is a satisfaction to know that the Iowa State Board and other state boards have established a quarantine against that state, and it was time. The odor was smelling to heaven, and it will take a generation to remove the blight."

—Most of the professions are overmanned. The result is injustice and disappointment to many who enter them and to many who have made heavy sacrifices that their sons might belong to them.

Speaking recently to young men at the Y. M. C. A., Dean Wigmore gave the following estimate:

About sixteen-twentieths of the lawyers in Chicago make from \$1,000 to \$3,000 a year. One-twentieth make \$4,000, one-twentieth \$5,000, one-twentieth make \$6,000 or more. There are not over forty lawyers in the city who make more than \$10,000 a year.

In too many cases the earning, though small, is adequate, because the man is not fitted for the difficult work of the law either by thorough education or by natural aptitude. These men are economic misfits but they divide the total rewards, even though they get little individually. The same is true of the medical profession. In both cases the test for entrance should be stricter, so that only the proved fit could win. This is not undemocratic. It is just to those who are fit and to those who are not fit; and—an important consideration—it is just to clients and patients, who should be protected from inferior service, and to society, which needs every man at the work he is best fitted to do.—*Chicago Tribune*.

MARRIAGES

DR. M. S. MARCY of Peoria to Miss Cullom, May 21.

DR. A. LEROY FISCHER of Hoffman to Miss Effie Risby of Lebanon, May 16.

DR. LEO ROBERT ROTH, Chicago, to Miss Jessie Maria Cloke of Ashkum, May 1.

DR. EDGAR EARL GELDER to Mrs. Gretchen Kastner Robinson, both of Peoria, at Chicago, May 16.

DEATHS

JAMES L. FINLEY, M.D., University of Louisville, Ky., 1896; a member of the Illinois State Medical Society; died at his home in Collison, Ill., April 29, from typhoid, aged 45.

JACOB FAIS, M.D., Medical College of Evansville, Ind., 1878; of Shawneetown, Ill.; died at the home of his brother in Louisville, Ky., April 25, from disease of the stomach, aged 73.

MARTIN J. LUNN, M.D., College of Physicians and Surgeons, Chicago, 1902; a member of the Illinois State Medical Society; died at his home in Chicago, April 19, from septicemia, due to an operation wound, aged 41.

JOSEPH WESLEY WELKER, M.D., Chicago Homeopathic Medical College, 1887; Hahnemann Medical College, Chicago, 1905; of Mattoon, Ill.; died at the home of his nephew in Chicago, April 23, from heart disease, aged 52.

ABRAHAM LUDWIG FREUND, M.D., Bennett Medical College, Chicago, 1877; a member of the Illinois State Medical Society; of Chicago; died in the Alexian Brothers Hospital, Chicago, May 5, three weeks after a surgical operation, aged 59.

HORATIO NATHANIEL GREENE, M.D., Jenner Medical College, 1905; of Chicago; died in the Washington Park Hospital in that city, April 11, from the effects of a knife wound of the throat, self-inflicted, it is believed with suicidal intent, aged 49.

RICHARD McVEY, M.D., for many years a practitioner at Waverly, Morgan County, died at Topeka, Kan., Thursday, May 23, aged 85 years. Dr. McVey had practiced in Kansas for about twenty-five years. The body was brought to Waverly for interment.

JOHN SHREFFLER KENNELLEY, M.D., College of Physicians and Surgeons, Keokuk, Iowa, 1880; formerly a practitioner of Easton, Ill., but for the last two years a resident of Longmont, Colo.; died at his home in that place, April 23, from cancer, aged 58.

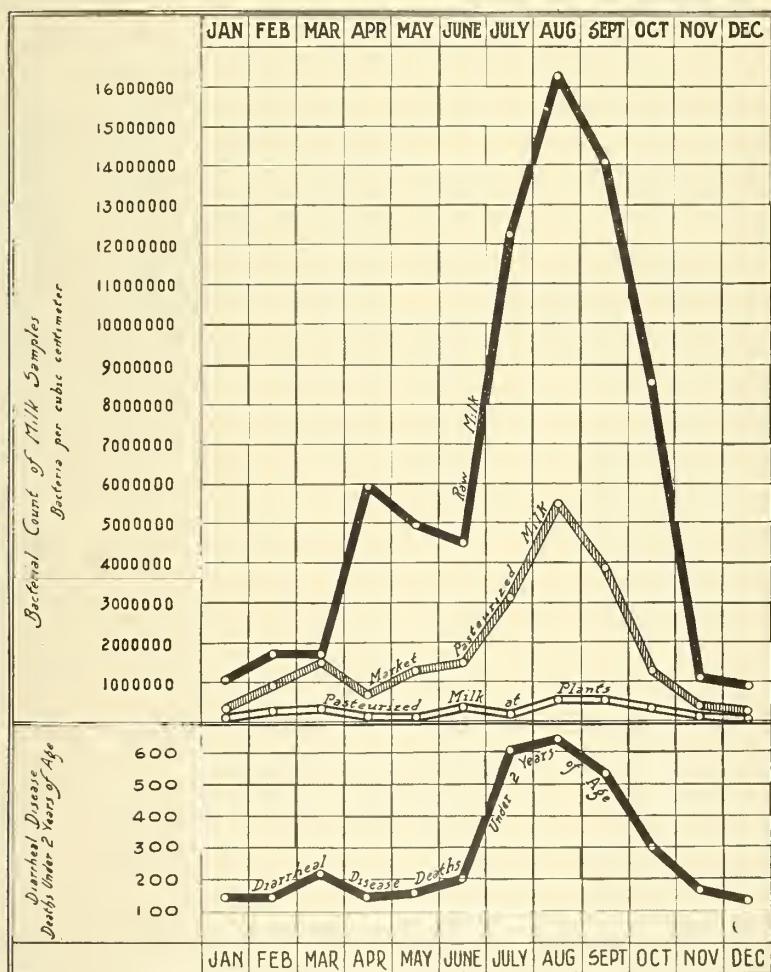
THOMAS MARCUS WARNOCK, M.D., College of Physicians and Surgeons, Keokuk, Iowa, 1884; formerly a practitioner of Tunnel Hill, Ill., and Liberty, Neb., who retired from practice and moved to Superior, Neb., and later to Sterling, Kan.; died suddenly, April 10, aged 60.

BACTERIA FOUND IN RAW AND PASTEURIZED MILK

Monthly Averages of Bacterial Counts, 1910

Compared With

MONTHLY DEATHS AMONG CHILDREN FROM DIARRHEAL DISEASES



From The Bulletin of the Chicago Department of Health

ILLINOIS STATE MEDICAL SOCIETY

MEDICO-LEGAL COMMITTEE

EXECUTIVE COMMITTEE

FROM ILLINOIS MEDICAL SOCIETY.

H. N. Moyer, 103 State St., Chicago.
Central 2751.
Clarence W. Leigh, 100 State St., Chicago.
E. W. Weis, Ottawa, Ill.

C. D. Pence, 1668 Turner Ave., Chicago.
Canal 1335.
M. L. Winstead, Wetaug, Ill.
J. M. Pfeiffenberger, Aiton, Ill.

FROM CHICAGO HOMEOPATHIC MEDICAL SOCIETY.

N. B. Delameter, 31 Washington St.,
Chicago. Central 1926.

J. B. Cobb, 42 Madison St., Chicago.
Central 32.

GENERAL COUNSEL

Calhoun, Lyford & Sheean, 806 The Rookery, Chicago.

County and Representative.	Address.
Adams—John A. Koch.....	Quincy
Alexander.....	
Bond—Not yet appointed.....	
Boone—A. J. Markley.....	Belvidere
Brown—William Parker.....	Mt. Sterling
Bureau—C. A. Palmer.....	Princeton
Calhoun.....	
Carroll—G. W. Johnson.....	Savanna
Cass—John A. Glenn.....	Ashland
Cook County, Chicago Medical Society:	

W. L. Noble.....	100 State St., Chicago
H. N. Moyer.....	103 State St., Chicago
C. D. Pence.....	1668 Turner Ave., Chicago
Champaign—W. F. Burres.....	Urbana
Christian—J. H. Miller.....	Pana
Clark—R. H. Bradley.....	Marshall
Clay—E. P. Gibson.....	Louisville
Clinton—J. J. Moroney.....	Breese
Coles—J. T. Montgomery.....	Charleston
Crawford—J. L. Firebaugh.....	Robinson
Cumberland—J. F. Adams.....	Hazel Dell
De Kalb—G. W. Nesblitt.....	Sycamore
De Witt—G. S. Edmundson.....	Clinton
Douglas—W. E. Rice.....	Tuscola
Edgar—C. L. Kerrick.....	Chrisman
Edwards—C. S. Brannan.....	Albion
Effingham—J. H. Walker.....	Effingham
Fayette—E. W. Brooks.....	St. Elmo
Franklin.....	
Fulton—W. S. Strode.....	Lewiston
Gallatin—T. Alfred Jones.....	Ridgeway
Greene—H. A. Chapin.....	White Hall
Grundy—H. M. Ferguson.....	Morris
Hamilton—Henry E. Hale.....	McLeansboro
Hancock—Charles L. Ferris.....	Carthage
Hardin—J. A. Wernack.....	Karbers Ridge
Henderson—J. P. Riggs.....	Media
Henry—C. W. Hall.....	Kewanee
Iroquois—Ford—O. O. Hall.....	Milford
Jackson—J. T. McAnally.....	Carbondale
Jasper—James P. Prestly.....	Newton
Jefferson—J. H. Mitchell.....	Mt. Vernon
Jersey—John S. Williams.....	Jerseyville
Jo Davless—D. G. Smith.....	Elizabeth
Johnson—A. I. Brown.....	Vienna
Kane-McHenry—George F. Allen.....	Aurora
Kankakee.....	
Kendall—R. A. McClelland.....	Yorkville
Knox—Ben. D. Baird.....	Galesburg
Lake—L. H. Tombaugh.....	Waukegan
LaSalle—E. W. Weis.....	Ottawa

County and Representative.	Address.
Lawrence—B. F. Hochman.....	Sumner
Lee—J. N. Nelms.....	Taylorville
Logan—Carl Rembe.....	Lincoln
Livingston—A. B. Middleton.....	Pontiac
McDonough—Arthur Adams.....	Macomb
McLean—E. Mammen.....	Bloomington
Macon—M. T. Hefferman.....	Decatur
Macoupin—J. S. Collins.....	Carlinville
Madison—E. A. Cook.....	Aiton
Marion—W. D. Richardson.....	Centralia
Marshall—S. O. Hendricks.....	Henry
Mason.....	
Massac—A. C. Ragsdale.....	Metropolis
Menard—S. T. Hurst.....	Greenview
Mercer—M. G. Reynolds.....	Aledo
Monroe—L. Adeisberger.....	Waterloo
Montgomery.....	
Morgan—J. N. Hairgrove.....	Jacksonville
Moultrie.....	
Ogle—J. M. Beveridge.....	Oregon
Peoria—E. E. Barbour.....	Peoria
Perry.....	
Platt—C. M. Bumstead.....	Monticello
Pike—L. J. Harvey.....	Griggsville
Pope.....	
Pulaski—M. L. Winstead.....	Wetaug
Putnam—S. O. Hendrick.....	Henry
Randolph—H. C. Adderly.....	Chester
Richland—A. T. Telford.....	Olney
Rock Island—G. L. Eyster.....	Rock Island
St. Clair—F. E. Auten.....	Belleville
Saline.....	
Sangamon—B. B. Griffith.....	Springfield
Schuyler.....	
Scott—James Miner.....	
Shelby—Frank Auld.....	Shelbyville
Stark—E. B. Packer.....	Touion
Stephenson—W. E. Karcher.....	Freeport
Tazewell—C. G. Muehimann.....	Pekin
Union—J. J. Lence.....	Jonesboro
Vermilion—Joseph Fairhall.....	Danville
Wabash—J. B. Maxwell.....	Mt. Carmel
Warren.....	
Washington—R. A. Goodner.....	Nashville
Wayne—W. C. Sibley.....	Fairfield
Whiteside—Charles G. Beard.....	Sterling
White—B. S. Crebs.....	Carmi
Will—Wm. Dougall.....	Joliet
Williamson—J. G. Parniey.....	Marion
Winnebago—Charles Winn.....	Rockford
Woodford—J. F. Page.....	Eureka



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